

Offshore oil and gas in the SCS and the protection of the marine environment

Part 2 – Legal and governance framework

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Abstract

The intensity of media and political coverage of boundary disputes masks the serious environmental risks which emanate from increasing offshore oil and gas exploration and development projects in the SCS and adjacent seas and distract the region from implementing a consistent regulatory framework to limit these risks. This paper discusses the current fragmented international and regional regulatory framework applicable to environmental impacts of offshore oil and gas activities, ranging from exploration to well abandonment and decommissioning and, in general, to the absence of a consistent regime for dealing with seabed activities. It considers the obligation of coastal States to adopt adequate legislation with respect to pollution from seabed activities under international law including unratified shipping treaties, insofar as they relate to pollution connected to seabed activities. Differences in regimes applicable to fixed as opposed to floating platforms, to self-propelled as opposed to non self-propelled platforms and to sections of an offshore installation which may be engaged in an international voyage as opposed to sections that are not, are outlined. The relevance of conservation treaties and shipping management tools that promote spatial planning are also discussed. Finally, the importance of standards and the need for regional consistency both legally and in practice are emphasized.

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Introduction

Offshore oil and gas activities, and their associated practices and standards are highly technical and unique to the very specialised offshore oil and gas industry. Prior to any exploration or development being undertaken by private entities, authorisation must be obtained from the relevant coastal States. While coastal States may delegate exploration and exploitation rights to public or private entities, they retain obligations with respect to the adoption of regulations and measures required by international law, including measures relating to the protection of the marine environment, and to safety and security at sea.

This paper is the second part of a general review of offshore oil and gas activities in the South China Sea (SCS) and their potential environmental impact. The first part provides an overview of the geography, geopolitics; a profile of current oil and gas offshore installations; a summary of the arrangements that have been concluded where no agreement could be reached with respect to overlapping maritime boundaries; and a discussion of the relative importance of the areas under overlapping claims in the context of offshore oil and gas activities. This overview sets the scene for a holistic review and discussion of the potential environmental risks created by the activities from the offshore oil and gas industry, ranging from exploration to abandonment.¹

This paper focuses on the obligations of coastal States with respect to the environmental impacts from offshore oil and gas activities. It highlights the obligation for coastal States to adopt adequate legislation with respect to pollution from seabed activities pursuant to international law, and the relevance of many international shipping treaties.

In order to identify relevant international treaties, the following key potential environmental issues have been considered²:

- Noise, vibrations and physical disturbances (seismic survey, underwater explosions, construction, etc.)
- Drilling waste including drilling fluids (hydrocarbon and additives, drilling cuttings and contaminated produced water)
- Marine discharge (oil and other compounds) from platforms and ships and Alien Invasive Species
- Gas and gas pipelines
- Decommissioning of platforms
- Extreme weather events
- Compounded impact with other uses of the same marine ecosystems and conflict in uses

In light of the obligations owed by coastal States flowing from these treaties, oil companies which seek to rely upon weak national legislation to justify substandard practices or which fail to comply with high standards contained in the contractual documentation run a high and direct risk of infringing legal obligations and compromising their reputation.

¹ Y.Lyons (2011) Offshore oil and gas in the SCS and the protection of the marine environment Part 1: A review of the context and offshore activities profile. Available on the website of the Centre for International Law at <http://cil.nus.edu.sg/publications/working-papers/>

² Key potential environmental impacts have been highlighted in the preceding paper. (Y.Lyons (2011) Ibid)

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The oil and gas activities discussed in this paper refer primarily to activities undertaken on the continental shelf of respective coastal States, as opposed to the activities undertaken in the Area³. This area covers the seabed and subsoil located beyond national continental shelves, roughly the potential High Sea located in the top part of the 'kite' (map 1 below).

1 Rights and obligations of coastal States under international law

1.1 Coastal States' sovereign rights over natural resources of the continental shelf⁴

The United Nations Convention on the Law of the Sea (UNCLOS)⁵ grants sovereign rights to coastal States for the purpose of exploring and exploiting its natural resources⁶, namely non-living and sedentary living resources⁷. No other State may undertake these activities on the continental shelf of another party without the express consent of the coastal State.⁸ The continental shelf extends to 200nm from the coastal State's baseline or to the continental margin up to 350nm (if the continental shelf extends beyond 200nm).⁹

1.2 Coastal States' obligations to cooperate

Where the proximity of opposite coastal States does not allow for the full extent of the delimitation rules to apply, coastal States must delimit their respective continental shelf by joint agreement.¹⁰ While many boundary disputes¹¹ have been resolved by joint agreement, many are still unresolved and are a source of on-going tension. Of note is the area around the Spratlys and Paracel Islands where the delimitation of maritime boundaries is complicated by disputes regarding sovereignty over islands and reefs. Currently, tensions are particularly high between China and Vietnam, and China and the Philippines with respect to areas located southeast of Vietnam around China's Wan'an Bei 21 concession block and southwest of the Reed Bank.¹²

Article 123 of UNCLOS requires States bordering enclosed or semi-enclosed seas to cooperate with each other when exercising rights and performing duties derived from UNCLOS. 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

³ Article 1(1) UNCLOS defines the Area and Article 133 and following UNCLOS provide for the applicable rules with respect to the Area.

⁴ The continental shelf of a coastal States comprises the seabed and subsoil of the submarine areas (Article 76 (1) UNCLOS).

⁵ 1982 United Nations Convention on the Law of the Sea, 1833 UNTS 3 / [1994] ATS 31 / 21 ILM 1261 (1982), available online at <http://cil.nus.edu.sg/1982/1982-united-nations-convention-on-the-law-of-the-sea/> (last accessed on 6 July 2011). UNCLOS has to date been ratified by all coastal States in the SCS but for Cambodia who so far only signed (Table 1 below).

⁶ Article 77 (1) UNCLOS

⁷ Article 77 (4) UNCLOS

⁸ Article 77 (2) UNCLOS

⁹ Article 76 (5) UNCLOS

¹⁰ Article 83 (1) UNCLOS

¹¹ For more details on boundary agreements in the South China Sea, refer to Nguyen Hong Thao and Ramses Amer (2009) A New legal arrangement for the South China Sea, *Ocean Development and International Law* 40: 333-349 and T. Davenport (2011) Joint Development in Asia: Some valuable lessons learned, In press (personal copy from the author).

¹² Y. Lyons (2011), *Ibid*: sections 3.2.1 and 3.2.2

duties of States with respect to the protection and preservation of the marine environment. However, to date, no such agreement has been reached in the SCS.¹³

With respect to pollution from seabed activities, coastal States must endeavour to harmonize their policies at the appropriate regional level¹⁴ and establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the environment from these activities¹⁵.

1.3 Joint Development Agreements or arrangements in the SCS

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 overlapping maritime claims or at the development of oil or gas fields straddling an agreed boundary.¹⁶ They range from short agreements, geographically bound and limited in use and time (such as joint seismic surveying subject to a specified duration and area¹⁷), to ambitious agreements including boundary setting and joint-development of the resources under set rules¹⁸. Joint-Development Agreements (JDA) signed between national oil companies appear to be especially successful, perhaps as a result of the flexibility that they allow for.¹⁹ However, the wording and modalities of these types of arrangements are generally not available for public scrutiny. Until now, arrangements have been signed on a bilateral and occasionally tripartite basis. This has resulted in a patchwork of agreements throughout the SCS with variegated rules and geographical scope and a disparity in the activities covered by the agreements. It should also be noted that, to date, these agreements cover a relatively small part of the overall disputed area. The map of cooperative agreements and arrangements signed to date can be divided between those of the Gulf of Thailand, the Gulf of Tonkin and the Southern South China Sea.

In the Gulf of Thailand, Malaysia signed two Joint-Development Agreements (JDA) with Thailand and Vietnam respectively²⁰, but exploration and exploitation of oil and gas remain problematic in areas subject to overlapping claims by (i) Cambodia and Thailand²¹, (ii)

¹³ For a review of programs in place, refer to J.W. McManus (2010) Towards establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Activities with an Emphasis on the Role of Taiwan, *Ocean Development and International Law* 41: 270-280 and A. Chircop (2010) Regional Cooperation in Marine Environmental Protection in the South China Sea: a Reflection on New Directions for Marine Conservation, *Ocean Development and International Law*: 334-356.

¹⁴ Article 208(4) UNCLOS

¹⁵ Article 208(5) UNCLOS

¹⁶ The conclusion of provisional Joint Development Agreements of mineral resources located in areas subject to overlapping claims are encouraged by Article 74(3) UNCLOS pending a boundary agreement.

¹⁷ Three years tripartite Agreement for Joint Marine Seismic Undertaking (JMSU) signed on 14 March 2005 between CNOOC, PNOOC and Petrovietnam. Refer to Y. Lyons (2011) *Ibid*, section 4.3

¹⁸ 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.

¹⁹ Tripartite Cooperation Agreement in November 2000 between Petrovietnam, Petronas and Pertamina. Refer to Y. Lyons (2011) *Ibid*, section 4.3

²⁰ T.Davenport (2011) Joint Development in Asia: Lessons for sustainable peace in the South China Sea, *Asian Journal of Comparative Law* (Personal copy from the author)

²¹ The 2001 Cambodia-Thailand Memorandum of Understanding (MoU) sets the basis for a joint utilization regime but it was denounced by the Thai government in 2009. The initial MoU only included agreements in principle to define a joint development area and delimit the two contiguous territorial seas. While Cambodia has been granting oil and gas concessions for some time, exploitation is only just starting. For further information on the 2009 developments from the Khmer press: Move to ditch maritime MoU short-sighted, in *The Nation*, published on

Cambodia and Vietnam²², and; (iii) Thailand and Vietnam²³. The most ambitious and legally complex of the two JDAs is the first one, which stemmed from a Memorandum of Understanding (MoU) agreed between Malaysia and Thailand in 1979²⁴, the instruments of ratifications of which were exchanged on 30 May 1990. The MoU²⁵, which is valid for 50 years or indefinitely if no agreement is reached on boundaries, creates a Joint Authority²⁶ and its scope extends beyond hydrocarbons 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.²⁷ The cumulative application of national laws in the agreed 'Joint Development Area' provided for in the MoU could technically also apply to pollution and create an obligation of conservation attached to the rights dealt with the MoU.

In contrast the 1992 Malaysia-Vietnam MoU, 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.²⁸ Petronas²⁹ and Petrovietnam³⁰ agreed on the application of the laws of Malaysia to the Defined Area for petroleum operations. Malaysian law thus applies to the determination of obligations and liabilities relating to the environmental impact of oil and gas activities in the Defined Area. The first exploitation under the MoU occurred in July 1997 in the Bunga Kekwa field.³¹

November 2009, can be accessed online at

http://www.nationmultimedia.com/2009/11/09/politics/politics_30116161.php (last accessed on 8 April 2011).

²² The 1982 Cambodia – Vietnam agreement on Historic Waters of Vietnam and Kamputchea consists in the designation of an area jointly claimed as historic waters and includes a provision for joint development. For more details on this agreement and others in the Gulf of Thailand, refer to Clive Schofield (2007) *Unlocking the Seabed resources of the Gulf of Thailand*, *Contemporary Southeast Asia* 29(2): 286

²³ Thailand and Vietnam reached an agreement on 9 August 1997 for the delimitation of the continental shelf and the exclusive economic zone in the Gulf of Thailand but no JDA nor agreement in principle was reached.

²⁴ 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 meters high above sea level and supporting no economic life of its own. Refer to Nguyen Hong Thao (1999) *Joint Development in the Gulf of Thailand*, *IBRU Boundary and Security Bulletin Autumn*: 79-88 Accessible online at http://www.dur.ac.uk/resources/ibru/publications/full/bsb7-3_thao.pdf (last accessed on 8 April 2011).

²⁵ Text of the MoU is reproduced in J.I. Charney and L.M. Alexander, *International Maritime Boundaries* (Dordrecht: Martinus Nijhoff Publishers, 1993) Vol1.: 1099-1123

²⁶ The chairmanship of the Authority alternates between the 2 countries every 2 years.

²⁷ Nguyen Hong Thao (1999) *Ibid*

²⁸ In a commercial arrangement signed in 1993, Petronas and Petrovietnam (with agreement of the respective governments) established a Coordination Committee composed of 8 members, with an equal number nominees appointed by each company, responsible decisions for the management of the Defined Area.

²⁹ Malaysia's national oil company

³⁰ Vietnam's national oil company

³¹ While the 1990 agreement between Malaysia and Thailand is generally viewed as an especially successful example of a comprehensive joint-development agreement, the speed in 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.

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In the Gulf of Thailand, exploration and exploitation of oil and gas remain problematic in areas subject to overlapping claims by (i) Cambodia and Thailand³², (ii) Cambodia and Vietnam³³, and; (iii) Thailand and Vietnam³⁴.

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 2000³⁵ set the basis for the 2005 Framework Agreement on Oil and Gas Cooperation between China National Offshore Oil Corp (CNOOC) and Petro Vietnam. However, the extent to which the latter agreement has been implemented is unclear as press articles report future, rather than on-going, joint-exploration efforts³⁶ (despite further announcement in 2006 to undertake more efforts for exploration in the Gulf of Tonkin³⁷). The area located south of the boundary delimitation, on the outskirts of the Gulf, is subject to strong tensions as shown by the recent dispute over exploratory drilling on a Vietnamese concession located off Da Nang.³⁸ In the Southern SCS, following the signature of a Tripartite Cooperation Agreement in November 2000, Petrovietnam, Petronas and Pertamina³⁹ entered into several production sharing contracts in disputed areas as well as in undisputed areas between the respective coastal States. 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 Serawak.⁴⁰ The latter may play a critical role in raising mutual understanding and trust, a prerequisite to successful negotiations in areas subject to overlapping claims. Other joint development areas would be considered and this successful collaboration is said to be

³² The 2001 Cambodia-Thailand MoU sets the basis for a joint utilization regime but it was denounced by the Thai government in 2009. The initial MoU only included agreements in principle to define a joint development area and delimiting the two contiguous territorial seas. While Cambodia has been granting oil and gas concessions for some time, exploitation is only just starting. For further information on the 2009 developments from the Khmer press : Move to ditch maritime MoU short-sighted, in *The Nation*, published on November 2009, can be accessed online at http://www.nationmultimedia.com/2009/11/09/politics/politics_30116161.php (last accessed on 8 April 2011).

³³ The 1982 Cambodia – Vietnam agreement on Historic Waters of Vietnam and Kampuchea consists in the designation of an area jointly claimed as historic waters and includes a provision for joint development. For more details on this agreement the others in the Gulf of Thailand, refer to Clive Schofield (2007) *Unlocking the Seabed resources of the Gulf of Thailand*, *Contemporary Southeast Asia* 29(2): 286

³⁴ Thailand and Vietnam reached an agreement on 9 August 1997 for the delimitation of CS and EEZ in Gulf of Thailand but no JDA nor agreement in principle.

³⁵ Zou Keyuan (2009) *Cooperative development of oil and gas resources in the South China Sea*, in *Security and International Politics in the South China Sea: Towards a co-operative management regime*, eds S.Bateman and R.Emmers.

³⁶ For instance, Xu Yihe, *Duo steps up efforts*, *Upstream Online*, 28 March 2008.

³⁷ In a Joint-press statement issued after the visit of Vietnam's Communist Party leader to Beijing on 24 August 2006, reported in Y.H. Song (2008) *The potential of marine pollution threat from oil and gas development activities in the disputed South China Sea/Spratly area: a role that Taiwan can play*, *Ocean Development and International Law* 39(2): 162.

³⁸ Vietnam: ExxonMobil to drill in South China Sea Block 119, *energy-pedia news* (from AFP), 1 April 2011, available online at <http://www.energy-pedia.com/article.aspx?articleid=144823> and Vietnam, China vow to work on disputed sea pact, 21 April 2011 available online http://www.energy-daily.com/reports/Vietnam_China_vow_to_work_on_disputed_sea_pact_999.html, and Exxon Mobil to drill off Vietnam, *Institute of Southeast Asia Studies*, 31 March 2011 <http://web1.iseas.edu.sg/?p=2983>

³⁹ Indonesia's national oil company

⁴⁰ Petrovietnam, Petronas, Pertamina to explore two blocks off Vietnam, by Robert Piepul, 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 (last accessed on 7 April 2011)

paving the way for a new era of intra ASEAN knowledge and information sharing designed to upgrade skills and expertise.⁴¹

In 2010, Brunei and Malaysia reached a 40-year Commercial Arrangement Area Agreement over disputed blocks L and M (according to Malaysia, blocks K and J for Brunei) located off Sabah (Map 5), indicating that these blocks are located on Brunei's continental shelf and organising for joint exploration and exploitation.

The three year tripartite Joint Marine Seismic Undertaking (a.k.a. JMSU) in the Agreement Area (part of the Spratlys) signed on 14 March 2005 between CNOOC, PNOC and Petrovietnam appears to have been less successful, based on (i) 2009 press coverage announcing their intention to abandon development plans for the area⁴²; (ii) the current tensions over the Reed Bank; and (iii) more generally over Vietnam's exploration and development off Da Nang and off Dai Lanh Cape⁴³. However, it should be noted that this new rise in tension follows on from a period of discussions (2005-2008) presented in the media and in academic journals as a constructive period in which coastal States were willing to set aside their disputes and embrace joint-development of the hydrocarbon potential.⁴⁴

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 on the continental shelf.⁴⁵ Sustainable exploration and extraction and management of pollution of the seabed from oil and gas activities are not built into the agreements nor implied. This is not surprising given that the MoUs were negotiated prior to present day concerns relating to environmental risks arising from seabed activities. Compared with the US, Europe or the Persian Gulf, exploitation of hydrocarbon in the SCS is at an earlier stage. While Malaysia's petroleum legislation, developed over years, is today regarded as one of the most sophisticated in the region, the national legislations of some other coastal States remain rudimentary and the subject of on-going developments. The level of development in Malaysian petroleum legislation in comparison to that of Vietnam's was one of pragmatic reasons as to why Vietnam agreed to the application of Malaysian law to the Defined Area.

While the principle of provisional practical arrangements pending the resolution of overlapping claims⁴⁶ is encouraged in UNCLOS, such arrangements are supposed to apply to all 'the States concerned' rather than only some of them.⁴⁷

1.4 Other States' right of innocent passage, freedom of navigation and freedom of laying submarine cables and pipelines

⁴¹ For more recent news coverage: <http://www.ethiopianreview.com/news/48192> (last accessed on 7 April 2011)

⁴² Philippines: Spratlys oil exploration deal on hold, energy-pedia news, 1 January 2009, available online at <http://www.energy-pedia.com/article.aspx?articleid=133302> (last accessed on 3 June 2011)

⁴³ Y.Lyons (2011) Ibid, refer to Section 3.2.

⁴⁴ Y.H. Song (2008) The potential of marine pollution threat from oil and gas development activities in the disputed South China Sea/Spratly area: a role that Taiwan can play, *Ocean Development and International Law* 39: 150-177

⁴⁵ 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.

⁴⁶ Article 83 UNCLOS

⁴⁷ Article 74 UNCLOS provides for the same rules and recommendations for provisional arrangements between the States concerned with regards to the delimitation of their Exclusive Economic Zone.

The legal picture would be incomplete without recalling briefly the parallel rights of other States over the coastal State's continental shelf (in the territorial sea and the exclusive economic zone (EEZ)). The territorial sea may be viewed as an extension of coastal States' land territory extending 12nm from the baseline.⁴⁸ Coastal States have full sovereignty over it although they must not interfere with other States' '*right of innocent passage*'⁴⁹ within their territorial sea. With regards to the EEZ, which extends to 182nm from the seaward limit of the territorial sea, coastal States do not enjoy sovereignty as they do in the territorial sea. In the EEZ, they have sovereign rights and jurisdiction limited to the circumstances defined in UNCLOS.⁵⁰ These include:

- Sovereign rights for the purpose of exploring, exploiting and conserving living and non-living resources;
- Jurisdiction with regard to offshore oil and gas installations; and
- Jurisdiction over marine scientific research.

However, in exercising rights and jurisdiction in their EEZ, coastal States must also respect the freedoms afforded to other States. Freedoms of navigation and submarine cable and pipeline laying⁵¹ are especially relevant in the context of offshore oil and gas activities. Freedom and safety of navigation impose constraints on offshore oil and gas platforms installation and their removal for instance.⁵² Pipeline laying and environmental impact from pipelines are particularly relevant in the SCS for the transport of gas. As the production of natural gas is growing in the SCS, so too does the pipeline network, which already covers several 1000kms.⁵³

1.5 Coastal States duties with respect to pollution from seabed activities and dumping within their jurisdiction

Coastal States have an obligation to adopt national laws and take measures to prevent, reduce and control pollution for the marine environment arising from or in connection with seabed activities subject to their jurisdiction⁵⁴ and from dumping⁵⁵ within their jurisdiction⁵⁶. These national laws and measures adopted to prevent, reduce and control pollution shall be no less

⁴⁸ Articles 2(1) and 24 UNCLOS

⁴⁹ Article 17 UNCLOS. Articles 18 and 19 further detail the condition for sailing of a ship through territorial waters to qualify as first a 'passage' and second an 'innocent' passage.

⁵⁰ Article 56 (1) and (2) UNCLOS

⁵¹ '*Subject to its right to take reasonable measures for the exploration of the continental shelf, the exploitation of its natural resources and the prevention, reduction and control of pollution from pipelines, the coastal State may not impede the laying or maintenance of such cables or pipelines*' (Article 79(2) UNCLOS).

⁵² As an example, Article 60(7) UNCLOS provides that oil and gas platforms '*may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation*' and Article 60(3) directs for the removal of all disused or abandoned installation or structure to ensure safety of navigation.

⁵³ Youna Lyons (2011) *Ibid*, sections 5.2.3 and 5.3.5

⁵⁴ Article 208 UNCLOS. 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 article 194(3)(c) UNCLOS.

⁵⁵ 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' (Article 1-1(1)(a) UNCLOS).

⁵⁶ 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 (article 208 UNCLOS) and by dumping (article 210 UNCLOS). These assume that the violation to be sanctioned has been implemented into the national laws of coastal States.

effective than the global rules and standards on dumping by pollution⁵⁷ and not less effective than international rules, standards and recommended practices and procedures⁵⁸ on pollution from seabed activities. Coastal States are thus expected to implement nationally a minimum standard defined by international instruments including guidelines from competent international authorities (such as the IMO). It follows from this that standards for pollution control and remediation contained in an international treaty should form the minimum standard to be implemented nationally, insofar as (i) it concerns pollution from seabed activities; and, (ii) the treaty has been ratified by a sufficiently large number of States to make it a globally accepted treaty.

These provisions on pollution from dumping and seabed activities must be contrasted with the provisions on pollution from vessels with respect to which coastal States have no obligation to implement nationally provisions contained in international treaties, unless they have ratified them.⁵⁹ With respect to pollution from vessels, flag States (not coastal States) are the recipient of the widest legislative and enforcement powers.⁶⁰ This difference in coastal States' obligation with respect to pollution from vessel and from dumping and seabed activities are the source of additional uncertainty with respect to the regime of pollution from offshore oil and gas activities when shipping treaties contain provisions designed to control pollution from seabed activities.

The clear and imperative obligation owed by coastal States to implement international rules, guidelines and standards is relevant to any treaty dealing with pollution from seabed activities.

Two circumstances come to mind where the exclusive or cumulative application of article 208 (pollution from seabed activities) and article 210 (pollution from dumping) or article 211 (pollution from vessel) of UNCLOS require additional guidance:

- Where states of a region have not ratified an international treaty otherwise ratified widely globally: how many ratifications are necessary for a treaty to be considered as a global treaty? Could an international treaty, which has been widely ratified globally, be considered as not embodying international law in a region where States have not ratified it?
- Where an international shipping treaty contains provisions relating also to pollution from seabed activities: will coastal States' obligation under article 208 of the UNCLOS apply or should the treaty be considered as a shipping treaty falling exclusively within the scope of article 211 of UNCLOS or a dumping treaty falling exclusively within the scope of article 210 of the UNCLOS, as the case may be?

These observations are of particular relevance in the context of the SCS where all shipping pollution treaties have not been widely ratified, some of which contain provisions relating to pollution from seabed activities.

UNCLOS also mandates coastal States to harmonize their policies at regional level and 'to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment' [from seabed activities].⁶¹

⁵⁷ 210(6) UNCLOS

⁵⁸ Article 208(3) UNCLOS for pollution from seabed activities .

⁵⁹ Article 211(4) and (5) UNCLOS

⁶⁰ Article 211(2) UNCLOS

⁶¹ Article 208(4) and (5) UNCLOS

While many regional agreements have been reached globally⁶², there is no such agreement in the SCS. The global agreement called for in Article 208 of UNCLOS has not yet been successfully negotiated either despite several attempts, and a global treaty to address offshore oil and gas activities seems unlikely in the short term.⁶³

1.6 The IMO and 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 activities⁶⁴, 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). While 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)), this is not always the case. 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 of its mandate.⁶⁵ 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.⁶⁶

This situation results in a fragmented 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 definitions such as whether the given installation or part thereof is a permanent installation or a disconnectable installation, whether

⁶² Examples include the 1992 Convention for the Protection of the Marine Environment of the North Atlantic (a.k.a. OSPAR Convention), the 1996 Convention for the Protection of the Mediterranean Sea against Pollution (a.k.a. 1976 Barcelona 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 to Zhiguo Gao (2000) Environmental regulation of the oil and gas industries, *Journal for the Centre for Energy, Petroleum and Mineral Law and Policy*, Vol2-11 Article, accessible online at <http://www.dundee.ac.uk/cepmlp/journal/html/vol2/article2-11.html> (last accessed on 25 April 2011) and M.Kashubsky (2006) Marine pollution from the offshore oil and gas industry: review of major conventions and Russian law (Part I), *Maritime Studies* No151: 1-11

⁶³ Since 1977, several drafts have been prepared at the initiative of the IMO to create an international convention regulating offshore oil and gas activities. However, the general inertia encountered and reported change in some States' position (the Maritime Law Association of the United States would have changed position in now challenging the need for such a comprehensive instrument on offshore units) led the IMO to remove this long-term plan of its work program. The Draft Offshore Units Convention produced by the Canadian Maritime Law Association, which is pursuing the effort, has met strong opposition of the USA (R.Shaw (2004) Report of the CMI Working Group on Offshore Mobile Craft, *CMI Yearbook*: 421 and M.Kashubsky (2006) *Ibid*)

⁶⁴ Convention on the International Maritime Organisation adopted on 6 March 1948 and Charter of the United Nations (Article 57)

⁶⁵ Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization (2008) A study by the Secretariat of the IMO, I:\LEG\MISC\6.doc, available online at <http://www.imo.org/OurWork/Legal/Documents/6.pdf> last accessed on 15 June 2011

⁶⁶ A. Spackman (2003) Environmental standards for offshore drilling, *Touch Oil and Gas*, available online at <http://www.touchoilandgas.com/environmental-standards-offshore-drilling-a101-1.html>

it is self-propelled or non-propelled, etc. 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 to distinguish non-disconnectable FPSOs and FSUs (designed to be permanently moored) as opposed to disconnectable ones, and self-propelled crafts as opposed to non-propelled crafts while operating in location.⁶⁷ These key criteria determine the sovereign rights that a coastal State has over given offshore installations located on its continental shelf and the legal regime which is applicable.

The 1974 International Convention for the Safety of Life at Sea (SOLAS)⁶⁸ provides a good example application of this guidance as this important convention only applies to 'ships engaged in international voyages'⁶⁹. Regulation 3 specifies that the ship must be 'propelled by mechanical means' and if a cargo ship, it must be superior to 500 tons GT.

Circulars, resolutions, guidelines and standards adopted by the IMO can be loosely grouped in 5 topics area: (i) safety of navigation through safety zones and routeing measures⁷⁰; (ii) construction rules⁷¹; (iii) security⁷²; (iv) training⁷³; and (v) decommissioning⁷⁴. While there is no guidance focusing on operational pollution alone, construction, navigation safety guidelines and decommissioning guidelines share a common goal of limiting pollution and environmental damage. Security rules can also contribute indirectly to the protection of the marine environment, although their primary goal is generally to preserve human life and promote safety. Circulars relating to the implementation of specialised treaties which are directly applicable to the protection of the marine environment from offshore oil and gas activities such as the 1973 International Convention for the Prevention of Pollution from Ships as amended by

⁶⁷ MSC-MEPC.2/Circ.9, dated 25 May 2010

⁶⁸ Available online at <http://cil.nus.edu.sg/1974/1974-international-convention-for-the-safety-of-life-at-sea/> (last accessed on 25 July 2011)

⁶⁹ SOLAS Annex, Chap I General Provisions, Part A - Regulation 1

⁷⁰ All ships must respect the safety zone designated around oil and gas infrastructures and shall comply with generally international standards regarding navigation in their vicinity. Requests to extend safety zones beyond the maximum 500 m are being discussed at the IMO and meeting conflicting views. Guidelines for consideration or requests for safety zones larger than 500m around artificial islands, installations and structures in the EEZ, Submitted by the United States, Sub-committee on safety of navigation, 56th session, NAV 56/4/1, 4 June 2010 and 2010 Draft SN Circular: Guidelines for safety zones and safety of navigation around offshore installations and structures, NAV 56/WP.3, 28 July 2010, Annex 14

⁷¹ The Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code) was adopted by Assembly Resolution A.1023(26). It updates and revises the 1989 MODU Code adopted by Assembly Resolution A.649(16), which itself superseded the 1979 MODU Code adopted by Resolution A.414(XI). To be also noted, the 1981 Guidelines for the design and construction of offshore supply vessels adopted by Resolution A.464(XII). While it is still in force for existing ships, it is now replaced by MSC. 235(82) for new ships.

⁷² The International Ship and Port Facility Security Code (the ISPS Code), which defines a comprehensive set of measures to enhance the security of ships and port facilities, specifically applies to mobile offshore drilling units. To be also noted, the 1988 Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf and its 2005 Protocol available online at <http://cil.nus.edu.sg/1988/1988-protocol-for-the-suppression-of-unlawful-acts-against-the-safety-of-fixed-platforms-located-on-the-continental-shelf/> and <http://cil.nus.edu.sg/2005/2005-protocol-to-the-1988-protocol-for-the-suppression-of-unlawful-acts-against-the-safety-of-fixed-platforms-located-on-the-continental-shelf/> respectively.

⁷³ Recommendations on training personnel on mobile offshore units (MOUs), IMO Resolution A.891(21), adopted on 25 November 1999. To be also noted, Resolution A.863(20) 1997 adopting the Code of Safe Practice for the Carriage of Cargoes and Persons by Offshore Supply Vessels (OSV Code), as amended by MSC.237(82)

⁷⁴ 1989 IMO 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 Protocol of 1978 (MARPOL)⁷⁵ and 1972 Convention on Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention)⁷⁶ are reviewed below.

2 Application of international treaties to relevant environmental impacts

Relevant international instruments have been considered according to categories of potential environmental impacts from offshore oil and gas activities, rather than instrument by instrument, with a view to identifying gaps and overlap, if any. The ratification status of relevant treaties by coastal States of the SCS can be found in table 1 below. It should be noted that environmental impacts are not presented in order of importance but rather in a thematic manner generally following the order in which the impact may occur in the course of offshore oil and gas activities.

2.1 Geological surveying and research in UNCLOS

UNCLOS clearly provides that the consent of the coastal State is necessary for the conduct of Marine Scientific Research (MSR) in its EEZ and on the continental shelf.⁷⁷ Although it does not define MSR nor envisage any other kind of research, UNCLOS also provides clearly that if a MSR reveals to be of direct significance for the exploration and exploitation of natural resources or involves the use of explosives, consent from the coastal State can be withdrawn. The controversy on whether a hydrographic survey can be conducted on the continental shelf of a coastal State by another State without seeking the prior approval of the coastal State is in our view irrelevant in the context of geological surveying for oil and gas.⁷⁸

Surveys conducted in an area subject to overlapping claims are invariably controversial. Such controversy may be temporarily resolved in areas where joint-surveying agreements have been signed. These can be agreed between national governments or national oil companies (e.g. the 2005-2998 Joint Marine Seismic Undertaking between Petrovietnam, CNOOC and PNOOC⁷⁹). However, these agreements tend to be confidential, especially where they are negotiated and entered into between national oil companies; and are generally silent as to the protection of the marine environment targeted for seabed exploration. Furthermore, there is no international regulation to limit environmental impact from geological surveying. UNCLOS remains the most relevant treaty in this regard. In addition to general provisions aimed at protecting and preserving the marine environment⁸⁰, UNCLOS also contains specific obligations intended to minimize pollution from offshore installations to the fullest possible extent, and, in particular, provide measures for preventing accidents and dealing with emergencies⁸¹ and measures

⁷⁵ Available online at <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/> (last accessed on 28 July 2011)

⁷⁶ Available online at <http://cil.nus.edu.sg/1972/1972-convention-on-the-prevention-of-marine-pollution-by-dumping-of-wastes-and-other-matter/> (last accessed on 28 July 2011)

⁷⁷ Article 246 UNCLOS

⁷⁸ Some authors consider that UNCLOS' provisions on MSR only apply to some but not all forms of data collection in the marine environment. For a presentation of the issue, see Yang Fang (2010) Exclusive Economic Zone (EEZ) regime in East Asian waters: Military and intelligence-gathering activities, Marine Scientific Research (MSR) and hydrographic surveys in EEZ, RSIS Working Paper No198. See also the views of J.A.Roach (2007) Defining Scientific Research: Marine Data Collection; 30, Centre for Ocean Law and Policy 541-573 and S.Bateman (2005) Hydrographic surveying in the EEZ: differences and overlaps with marine scientific research, Marine Policy 29: 163-174

⁷⁹ National oil company of the Philippines.

⁸⁰ Articles 192 and 194 UNCLOS mandate the obligation to prevent, reduce and control pollution from any source, using best practicable means. Article 240(d) UNCLOS provides for a similar obligation in the context of MSR

⁸¹ Article 194(3)(c) UNCLOS

necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life⁸².

Implementation of these general provisions in the national legislation of the coastal State and/or the flag State of the research vessel will direct the constraints set on geological surveying, if any. The relevance of the Convention on Biological Diversity and other conservation treaties is discussed later in this paper in the context of spatial planning (sections 3.1 and 3.2 below).

2.2 Seaborne pollution from liquid and gaseous waste (oil, gas, drilling fluids)

2.2.1 Discharge from offshore installations, ships and pipelines

Oil discharge from ships is the subject of numerous international treaties, the provisions of which may be applicable to offshore installations, whether fixed or mobile, or to the latter only. The analysis below focuses on the obligations of coastal States with respect to pollution occurring within their respective jurisdiction, be it in the territorial sea, the exclusive economic zone or on the continental shelf. However, it must be noted that the flag States and port States have distinct rights and duties, especially with regards to pollution from vessels. Relevant treaties have been reviewed below according to categories of waste being discharged as a direct or indirect result of offshore oil and gas activities.

Given the large percentage of natural gas reserves in the SCS and the increase in offshore gas production, the growing infrastructure of transboundary gas pipelines requires an adequate legal regime, at least at a regional level for the SCS. Although the treaties reviewed below do not apply to pipelines that are in use, the discard of pipelines at sea, after they have been removed for instance, would fall under MARPOL Annex V (see section 2.3 below) and the London Convention (see section 2.6 below).

The laying of pipelines and of submarine cables are dealt with together by UNCLOS, which provides for the respective rights of coastal States and other States in the laying of pipelines in a coastal State's EEZ or continental shelf.⁸³ While coastal States cannot impede the laying of pipelines on their continental shelf by other States, their consent must be obtained with regard to the route⁸⁴ and restrictions may be imposed with regard to the prevention, reduction and control of pollution from pipelines.⁸⁵ However, UNCLOS provisions are less specific with regards to responsibility from damage to a pipeline occurring in a coastal States' EEZ or continental shelf than if it occurs in the high sea or in the area.⁸⁶ There are no specific provisions to address maintenance duties nor damage to pipeline or pollution from pipeline impacting on the marine environment of a coastal State's EEZ, other than the general responsibility of that coastal State which has jurisdiction over the pipeline by virtue of its location. While the coastal States has jurisdiction to enact laws and regulation with respect to the laying of pipelines on its continental shelf, this jurisdiction is limited beyond the territorial

⁸² Article 194.5 UNCLOS

⁸³ Articles 58.1 and 79 UNCLOS

⁸⁴ Article 79.3 UNCLOS

⁸⁵ Article 79.1 UNCLOS

⁸⁶ Articles 113, 114, 115 UNCLOS. The High Sea, the Area and their resources are the common heritage of mankind. UNCLOS provides for a protective regime, particularly with respect to exploration and exploitation of non-living resources.

sea. The enforcement jurisdiction of a coastal State is similarly limited. While UNCLOS does not recognize general jurisdiction of the coastal States over pipelines, it grants jurisdiction to adopt regulatory measures and enforce them over specific activities (such as bottom trawling in areas surrounding pipelines), which coastal States can rely on to minimize the risk of environmental harm from pipelines.⁸⁷ However, this does not address the problem of environmental harm occurring due to lack of maintenance.

2.2.2 Avoiding discharge of oil and oily mixtures

The 1973 International Convention for the Prevention of Pollution from Ships as amended by the Protocol of 1978 (a.k.a MARPOL) is primarily aimed at the shipping industry but also applies to parts of offshore oil and gas operations. MARPOL operates through six technical annexes, each addressing a different kind of pollution: Annex I regulates pollution by oil⁸⁸; Annex II 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.⁸⁹ In MARPOL, the definition of 'ship' includes floating craft and fixed and floating platforms.⁹⁰ It should be noted that while Annexes I and II have been ratified by all the coastal States of the SCS, Annex III, IV and V have not been ratified by more than half and only Singapore, Malaysia and China have ratified Annex VI.

Whilst the main aim of MARPOL is to prevent the discharge of harmful substances in the marine environment, it excludes '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.⁹¹ However, the revised Annex I contains special requirements for fixed or floating platforms including drilling rigs, floating production, storage and offloading facilities (FPSOs) used for the offshore production and storage of oil, and floating storage units (FSUs) used for the offshore storage of produced oil. When they are engaged in the exploration, exploitation and associated offshore processing of sea-bed mineral resources and other platforms, they must comply with requirements applicable to ships of 400 gross tonnage and above other than oil tankers and other requirements including 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 mixture except when the oil content of the discharge without dilution does not exceed 15 parts per million.⁹² These provisions, which could be deemed to limit the oil concentration allowed in

⁸⁷ Stuart Kaye, *The Protection of Platforms, Pipelines and Submarine Cables under Australian and New Zealand Law*, in Natalie KLEIN, Joanna MOSSOP and Donald ROTHWELL, eds. *Maritime Security: International Law and Policy Perspectives from Australia and New Zealand* (New York: Routledge, 2010), 192

⁸⁸ Revised Annex I adopted by resolution MEPC.117(52) on 15 October 2004

http://www.mpa.gov.sg/sites/circulars_and_notices/pdfs/shipping_circulars/sc06-11a.pdf (last accessed on 27 April 2011)

⁸⁹ The text of the treaty can be viewed online at <http://treaties.un.org/doc/Publication/UNTS/Volume%201340/volume-1340-I-22484-English.pdf>. All the annexes and amendments are available at <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/> (last accessed on 27 April 2011)

⁹⁰ Article 2 (4) MARPOL

⁹¹ Discharges that fall within the scope of the London Convention are also excluded from the scope of MARPOL.

⁹² Revised Annex I *ibid* and Guidelines for the application of the revised MARPOL Annex I requirements to Floating Production, Storage and Offloading Facilities (FPSOs) and Floating Storage Units (FSUs), Resolution MEPC.139(53). See also Paragraphs 6.13 and 6.14 of 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.

drill cuttings discharged, require implementation in the legislation of coastal States to be binding on operators in charge of hydrocarbon activities in the SCS.

2.2.3 Managing oil spills from offshore installations and setting liability

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 is the 1976 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration and Exploitation of Sea Bed Mineral Resources (CLEE Convention) which has never come 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, measures must be taken by coastal States to deal with pollution incidents from offshore platforms, either nationally or in co-operation with other countries, to comply with the 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (the OPRC Convention), which entered into force in 1995⁹³. Pursuant to this convention, operators of offshore units (either floating or fixed) located within the jurisdiction of state 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.⁹⁴ Similarly, ships flying the flag of state Party must carry a shipboard oil pollution emergency plan.⁹⁵ The OPRC Convention also requires that specific tools be developed and equipment be used, including oil spill combating equipment, programmes of exercises and training, detailed plans and communication capabilities as well as a mechanism or arrangement to coordinate the response to an oil pollution incident.⁹⁶ To date, Malaysia, the Philippines, Singapore and Thailand have ratified the OPRC Convention. However, Vietnam and Cambodia, which are not a party 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 2006.⁹⁷

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)⁹⁸ which entered into force in 2008, and has been ratified by China, Malaysia, Singapore and Vietnam to date (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

⁹³ Available online at <http://cil.nus.edu.sg/1990/1990-international-convention-on-oil-pollution-preparedness-response-and-co-operation/> (last accessed on 29 July 2011)

⁹⁴ 1990 International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), article 3.1(c), available online at <http://cil.nus.edu.sg/1990/1990-international-convention-on-oil-pollution-preparedness-response-and-co-operation/> (last accessed on 15 June 2011)

⁹⁵ Article 3(1)(b) OPRC Convention

⁹⁶ Articles 6(1) and (2) 1990 OPRC Convention

⁹⁷ P.Charlebois et al. (2010) Steering the course towards safer shipping and cleaner seas, *Tropical Coasts* 16: 8

⁹⁸ The text of the 2001 Bunker Convention is available online at http://cil.nus.edu.sg/rp/il/pdf/2001_International_Convention_on_Civil_Liability_for_Bunker_Oil_Pollution_Damage-pdf.pdf (last accessed on 15 June 2011)

should include crude oil.⁹⁹ The pollution incident must involve bunker oil on board or originating from a ship¹⁰⁰, that being any seagoing vessel or seaborne craft, of any type¹⁰¹, provided that the pollution damage does not fall within the narrower definition of the 1992 Civil Liability Convention which applies to oil pollution from oil tankers^{102, 103}. The 2001 Bunker Convention may thus apply to oil pollution from FSU, FPSO and drilling units without distinction as to it is 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.¹⁰⁴ It does not envisage other remedies to address pollution nor duties on ship-owners to repair and mitigate. Some of these types of issues are addressed in the OPRC Convention.

The ship-owner liability under the 2001 Bunker Convention is limited¹⁰⁵ under the 1976 Convention on the Limitation of Liability for Maritime Claims¹⁰⁶ (a.k.a. 1996 LLMC) as amended by its 1996 Protocol¹⁰⁷. This limitation of liability creates an unexpected situation due to the difference in the definition of 'ship' respectively contained in the 2001 Bunker Convention and in the 1996 LLMC. The 1996 LLMC excludes FSO, FPSO and drilling units in operation from its scope, but the 2001 Bunker Convention includes them within its scope.¹⁰⁸ This should result in an unlimited regime of responsibility for pollution from ships which fall within the scope of the 2001 Bunker Convention but not that of the 1996 LLMC, namely FSO, FPSO and drilling units. However, this seems to be a situation that was not envisaged by the negotiators of the 2001 Bunker Convention. It produces an unacceptable outcome for the industry.¹⁰⁹

This paper presents the view that the 2001 Bunker Convention, the 1996 LLMC and the OPRC Convention set the minimum standard to be implemented by coastal States, insofar as they relate to pollution connected to seabed activities, which includes pollution from all floating platforms. This is based on the mandatory character of the obligation owed by coastal States to adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or in connection with seabed activities and from installations and structures that shall be 'no less effective than international rules, standards and recommended practices and procedures'. Provided that the 2001 Bunker Convention, the 1996 LLMC and the OPRC

⁹⁹ Article 1(5) 2001 Bunker Convention

¹⁰⁰ Articles 3 and 4 2001 Bunker Convention, *Ibid.*

¹⁰¹ Article 1.1 2001 Bunker Convention, *Ibid.*

¹⁰² The 1992 Civil Liability Convention (a.k.a. CLC Convention) designates the 1992 Protocol replacing the 1969 International Convention on Civil Liability for Oil Pollution Damage. This international shipping convention aims at compensating persons who suffer oil pollution damage resulting from maritime casualties involving oil-carrying ships. It creates a strict liability regime applicable to ships carrying oil in bulk as cargo. The text of the convention is available online at <http://cil.nus.edu.sg/1992/1992-protocol-to-amend-the-1969-international-convention-on-civil-liability-for-oil-pollution-damage/> (last accessed on 22 July 2011). See section 2.2.4 below.

¹⁰³ 2001 Bunker Convention, *Ibid* Article 4.1.

¹⁰⁴ It also contains important provisions on compulsory insurance and financial security certificate and liability limitation.

¹⁰⁵ 2001 Bunker Convention, *Ibid* Article 6.

¹⁰⁶ The text of the convention is available at <http://www.admiraltylawguide.com/conven/limitation1976.html> (last accessed on 15 June 2011)

¹⁰⁷ The text of the protocol is available at <http://www.admiraltylawguide.com/conven/protolimitation1996.html> (last accessed on 15 June 2011)

¹⁰⁸ Article 15.5 (b) of the 1976 Convention on the Limitation of Liability for Maritime Claims excludes pollution from 'floating platforms constructed for the purpose of exploring or exploiting the natural resources of the sea-bed or the subsoil'. *Ibid.*

¹⁰⁹ Bunkers Certificate for Offshore Units, by B.Jennings, 24 March 2009, *The Standard Bulletin*, available online at http://www.standard-club.com/docs/14809_SB_MAR_09_disclaimer.pdf (last accessed on 15 June 2011)

Convention qualify as either international rules, standards, recommended practices or procedures, they can be considered as setting a minimum requirement under UNCLOS (refer to section 1.5 above).

The Legal Committee of IMO 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.¹¹⁰

2.2.4 Oil spills during transport

The 1969 Civil Liability Convention, as amended by the 1992 protocol (the CLC Convention) has been ratified by all the coastal States of the SCS.¹¹¹ It aims at ensuring that those who suffer oil pollution damage resulting from maritime casualties involving oil-carrying ships¹¹² be compensated. The scope of the CLC Convention includes self propelled and non-propelled ships. It places strict liability for damage from oil on the owner of the ship from which the polluting oil escaped or was discharged. This convention does not apply to oil spills from oil storage barges used within offshore installations (during loading for instance) but it does apply to oil spills occurring during the transport of the barge from the offshore installation to the next destination.

The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage Protocol 1992 (a.k.a. IOPC-FUND or 1992 Fund Convention)¹¹³ is a supplement to the CLC Convention. It establishes a regime for compensating victims who do not obtain full compensation under the CLC Convention. The 1992 Funds established under the 1992 Fund Convention are part of an international regime of liability and compensation for oil pollution damage caused by oil spills from tankers. By becoming a Party to the 1992 Fund Convention, a State becomes a Member of the 1992 Funds, which is financed by contributions levied on any person who has received more 150,000t of crude oil in a calendar year.¹¹⁴

The 2001 Bunker Convention, the 1976 Convention on the Limitation of Liability for Maritime Claims and MARPOL Annex 1 also apply to oil pollution occurring during transport from offshore installations (see section 2.2.3 above).

2.2.5 Discharge of other noxious substances than oil and oily mixtures

With regards to non-oily components of drilling fluids, produced water and offshore processing drainage and displacement water, MARPOL Annex II, which addresses pollution by noxious liquid substances, is relevant. However, this Annex does not include specific provisions allowing for its application to offshore oil and gas operations. This means that discharges

¹¹⁰ IMO Legal Committee, 97th Session 15-19 November 2010, IMO Legal Committee supports follow-up to deep-water Horizon and Montara, available online at <http://www.imo.org/MediaCentre/MeetingSummaries/Legal/Pages/LEG-97th-Session.aspx> (last accessed on 22 June 2011).

¹¹¹ Convention available online at <http://cil.nus.edu.sg/1992/1992-protocol-to-amend-the-1969-international-convention-on-civil-liability-for-oil-pollution-damage/> (last accessed on 15 June 2011)

¹¹² Article 1.1 CLC

¹¹³ Convention available online at http://cil.nus.edu.sg/rp/il/pdf/1992_protocol_to_amend_1971_IC_on_International_Fund_for_Compensation_for_Oil_Pollution_Damage-pdf.pdf (last accessed on 15 June 2011)

¹¹⁴ See Publication of the International Oil Pollution Compensation Fund 1992, available online at <http://www.iopcfund.org/npdf/engtextoc.pdf> (last accessed on 15 June 2011)

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.¹¹⁵ 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.

It should be noted that Annex IV on pollution from sewage applies to ships engaged in international voyages and thus not to fixed and floating offshore platforms.¹¹⁶

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 that those applicable to oil spills (see section 2.2.3 above). Although coastal States of the SCS should implement this treaty to comply with article 208, 216(1) and 220(1) of UNCLOS (see section 1.6 above), it should be noted that to date it has only been ratified by China and Singapore.

The 2001 International Convention on the Control of Harmful Anti-fouling Systems on Ships (the 2001 AFS Convention)¹¹⁷ applies to ships and offshore platforms, both fixed and floating¹¹⁸ and provides that after 1st January 2008, offshore installations will not be allowed to bare organotin compounds on their external parts and surfaces, except within specific condition to ensure that there be no contamination to the marine environment.¹¹⁹ While the 2001 AFS Convention has not been widely ratified in the SCS as yet (so far only China, Malaysia and Singapore have ratified; see table 1 below), it is too early to take any view on the position adopted by respective coastal States in that respect. Furthermore the standard it contains should be implemented in the national legislation of coastal States pursuant to article 208 of the UNCLOS, insofar as it involves 'ships' involved in seabed activities (see section 1.5 above).

Although pollution from offshore oil and gas activities will mostly fall outside the scope of the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the 1989 Basel Convention)¹²⁰, it has been unanimously ratified in the SCS. The Basel Convention regulates the transboundary movements of hazardous and other wastes applying the "Prior Informed Consent" procedure (shipments made without consent are illegal). Each party is required to introduce appropriate domestic legislation to prevent and punish illegal traffic in hazardous and other wastes. The Convention also obliges Parties to ensure that hazardous and other wastes are managed and disposed of in an environmentally sound manner.

¹¹⁵ IMO Assembly Resolution A.673(16) adopted on 19 October 1989, as amended by the Resolutions of the Maritime Safety Committee MSC 184(79) and MSC.236

¹¹⁶ Regulation 2.1 of the 2004 Revised Annex IV of MARPOL 73/78, Resolution MEPC.115(51) Amendments to the annex of the Protocol of 1978 relating to the international Convention for the Prevention of Pollution from Ships, entered into force on 1 August 2005. The provisions on sewage fall out of the scope of the exclusion of discharge from exploration, exploitation and associated offshore processing of seabed minerals resources as sewage does not result from such activities. However, the application of the regulations on sewage discharge to offshore installations is limited by the requirement that the discharge occurs from a vessel involved in an international voyage.

¹¹⁷ Convention available online at <http://www.austlii.edu.au/au/other/dfat/treaties/2008/15.html> (last accessed on 15 June 2011).

¹¹⁸ Article 2.9 2001 AFS Convention, *Ibid.*

¹¹⁹ Annex 2 2001 AFS Convention, *Ibid.*

¹²⁰ Available online at <http://cil.nus.edu.sg/1989/1989-basel-convention-on-the-control-of-transboundary-movements-of-hazardous-wastes-and-their-disposal/> (last accessed on 5 August 2011)

The Convention applies to used oils, Persistent Organic Pollutant wastes (POPs wastes), chemicals that persist for many years in the environment and bio-accumulate, Polychlorinated Biphenyls (PCBs), and compounds used in industry as heat exchange fluids as an example of substances relevant to offshore oil and gas activities.

2.2.6 Inapplicability of the London Convention on dumping

The 1972 London Convention is the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention).¹²¹ In force since 1975, it was the first global convention to regulate dumping, i.e. the deliberate disposal at sea of wastes and other material of any kind. Dumping includes any deliberate waste at sea from offshore oil and gas installations¹²² but not if they are a by-product of the exploration, exploitation and associated processing of seabed mineral resources¹²³. While the 1972 Convention lists wastes that are prohibited, the 1996 Protocol to the London Convention (London Protocol)¹²⁴, which superseded it, reversed the mechanism. All waste is prohibited unless it is listed as an acceptable waste for disposal and a permit has been issued. Given the exclusion of dumping of waste related to offshore oil and gas operation reiterated in the 1996 Protocol, application of the London Convention and its Protocol with regards to the activities of offshore oil and gas installations is limited. However, it leaves the disposal of offshore installations and structures within its scope. This is reviewed below in the section on decommissioning of offshore platforms.

2.3 Seaborne pollution from solid waste such as drill cuttings and disposal of other solid waste

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 very large 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.

With regards to the limits to the application of the London Convention, please refer to section 2.2 above.

It must be noted that neither MARPOL nor the London Convention (including its 1996 Protocol) apply to the disposal at sea of incinerated waste, an alternative method of waste disposal, unless it was generated outside the normal operation of the platform.¹²⁵ The rationale for this might be that pollution from the atmosphere, irrespective of the source, should be dealt with by a separate instrument, primarily MARPOL Annex VI and some future ones.¹²⁶

¹²¹ <http://cil.nus.edu.sg/1972/1972-convention-on-the-prevention-of-marine-pollution-by-dumping-of-wastes-and-other-matter/> (last accessed 29 April 2011)

¹²² Article III 1.(a)(i) London Convention 1972

¹²³ Article III 1.(c) London Convention 1972: Dumping does not include “*the disposal of wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of sea-bed mineral resources.*”

¹²⁴ <http://cil.nus.edu.sg/1996/1996-protocol-to-the-1972-convention-on-prevention-of-marine-pollution-by-dumping-of-wastes-and-other-matter/>

¹²⁵ This would fall under Article 1.5.2 of the 1996 Protocol (Ibid). Incinerated waste is outside the scope of MARPOL Annexes.

¹²⁶ However, the Marine Environment Protection Committee 40th Session on 25 September 1997 adopted a Standard Specification for Shipboard Incinerators (resolution MEPC.76(40)). The specification covers the design,

The Marine Environment Protection Committee (MEPC) of the IMO approved, at its 61st session, with a view to adoption at its next session, amendments to revise and update MARPOL Annex V Regulations for the prevention of pollution by garbage from ships, following a comprehensive review of this Annex. This new text expands the requirements for placards and garbage management plans to fixed and floating platforms engaged in exploration and exploitation of the sea-bed.¹²⁷ However, this revised Annex V has been debated for more than six years so the date of adoption is yet to be confirmed.¹²⁸ The 62nd session is due to meet mid-July 2011.

2.4 Air Pollution and sequestration of carbon dioxide in geological formations

Currently international treaties do not limit carbon dioxide emission by the shipping industry. MARPOL Annex VI¹²⁹ was the first instrument dealing with pollution of the marine environment through the atmosphere arising out of navigation and applies to offshore petroleum activities. It focuses on sulphur and nitrogen content of fuel oil, ozone-depleting substances such as halons and chlorofluorocarbons (CFCs), on-board incineration of certain products such as contaminated packaging materials and the emissions of volatile organic compounds (VOCs) from tankers in ports or terminals. Air pollution from oil and gas activities is partly covered in this Annex.¹³⁰ Current work on the revised Annex VI still being negotiated aims at including provisions designed to limit Greenhouse Gas emissions from the shipping industry¹³¹, likely to also apply to mobile offshore drilling units.¹³²

The 1997 Kyoto Protocol to the 1992 United Nations Framework Convention on Climate Change (UNFCCC)¹³³ mandates Member States to pursue limitation or reduction of emissions of greenhouse gases from marine bunker fuels (not already regulated under the Montreal Protocol¹³⁴), through the International Maritime Organization. Further, obligations to limit greenhouse gas emissions under the UNFCCC and the Kyoto Protocol do not impose mandatory emission limits on developing countries (so called, non-Annex I countries). Pending the

manufacture, performance, operation and testing of incinerators designed to incinerate garbage and other shipboard waste

¹²⁷ <http://www.imo.org/MediaCentre/PressBriefings/Pages/Revised-MARPOL-Annex-III-adopted-at-IMO-environment-meeting.aspx>

¹²⁸ It was already close to adoption at the 37th Session: MEPC/11/Rev.1; MEPC37/WP.11, para.11.9

¹²⁹ Annex VI entered into force on 19 May 2005 and a revised Annex VI was adopted in October 2008 which entered into force on 1 July 2010.

<http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Default.aspx>

¹³⁰ Combustion and flaring result in emissions of carbon dioxide (CO₂), carbon monoxide (CO), methane (CH₄) and oxides of nitrogen (NO_x) and sulphur (SO_x). Venting releases Volatile Organic Compounds (VOCs) and methane, whilst firefighting and refrigeration releases Halon and chlorofluorocarbons (CFCs).

http://www.oilandgasuk.co.uk/knowledgecentre/atmospheric_emissions.cfm (last accessed on 29 April 2011).

¹³¹ http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Documents/COP_16_Submissions/IMO_note_AWG-LCA_13.pdf

¹³² Information Resources on Climate Change and the Maritime Industry from IMO knowledge Centre

<http://www.imo.org/KnowledgeCentre/InformationResources/ClimateChangeandtheMaritimeIndustry/Documents/InformationResourcesonClimateChangeandtheMaritimeIndustry.pdf>

¹³³ These have as objective the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

Article 4-1 (e) UNFCCC provides that all parties shall '*develop and elaborate appropriate and integrated plans for coastal zone management*'. However, bunker fuel is excluded from the scope.

<http://unfccc.int/resource/docs/convkp/conveng.pdf> (date last accessed: 8 September 2010).

¹³⁴ Montreal Protocol on Substances that Deplete the Ozone Layer 1987 available online at

<http://cil.nus.edu.sg/1987/1987-montreal-protocol-on-substances-that-deplete-the-ozone-layer/>

adoption of the new Annex VI under MARPOL, there is no mandatory commitment owed by the coastal States of the SCS to limit their greenhouse gas emissions other than those applicable under the Montreal Protocol. It must be noted that in the SCS Singapore is the only country to have ratified Annex VI. Further, the language of UNCLOS is more flexible with regards to pollution from the atmosphere than pollution by dumping or from seabed activities.

Regulations to be adopted by coastal States shall take 'into account internationally agreed rules, standards and recommended practices and procedures and the safety of air and navigation'.¹³⁵ The text requires that international rules be merely 'taken into account'.

Sequestration of gas in sub-seabed formation in order to avoid air pollution is now subject to a distinct regime. The Conference of the Parties to the 1996 London Protocol has taken on the task of regulating sequestration of carbon dioxide in sub-seabed formation, based on the text of the London Convention 1972, the objective of which is to protect and preserve the marine environment from all sources of pollution and take effective measures to prevent, reduce and where practicable to eliminate pollution caused by dumping or incineration at sea of wastes.¹³⁶ In 2006, the parties to the London Protocol adopted amendments to regulate carbon dioxide sequestration in sub-seabed geological formations, aimed at permanent isolation of the carbon dioxide injected, and to prohibit liquid carbon dioxide discharges directly into the deep oceans, because of its uncontrollability.¹³⁷ The amendment has been in force since 2007 and guidelines have been adopted for its implementation.¹³⁸ In 2009, the London Protocol was further amended to enable Parties to share transboundary sub-seabed geological formations for sequestration projects, on the condition that the protection standards of the London Protocol are fully met.¹³⁹ In December 2010 no carbon dioxide sequestration permit had yet been reported to the IMO. However, these new provisions of the London Protocol and guidelines are very relevant in the context of the SCS and the many transboundary joint development of offshore oil and gas deposits, whether they straddle over the maritime boundary or are located in areas of overlapping claims. While the full understanding of these new provisions and their application to non Parties might not always be fully comprehended by coastal States of the SCS, their implementation would be desirable if not required under UNCLOS.

2.5 Biological pollution: Ballast Water Management (BWM)

Marine ecosystems surrounding offshore platforms and installations are particularly exposed to invasive species due to the traffic of ships it attracts 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 to the transfer of species from a location to another.¹⁴⁰ Furthermore, they can be

¹³⁵ Article 212(1) UNCLOS

¹³⁶ Article 1 London Convention, *Ibid*

¹³⁷ Resolution LC-LP.1(1) reported on by IMO: Information on work on carbon capture and storage in sub-seabed geological formation and ocean fertilization under the London Convention and London Protocol. Available online at http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Documents/COP_16_Submissions/IMO_note_on_LC-LP_matters.pdf (last accessed on 22 June 2011)

¹³⁸ Risk assessment and management framework for CO₂ sequestration in sub-seabed geological structures and specific guidelines for assessment of carbon dioxide streams for disposal into sub-seabed geological formations.

¹³⁹ Resolution LC-LP.3(4) concerning the export of waste for dumping purposes, in IMO note, Information on work on carbon capture and storage in sub-seabed geological formation and ocean fertilization under the London Convention and London Protocol. *Ibid*

¹⁴⁰ Biofouling can be described as biological growth on man-made structure in the aquatic environment

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). Ratifications to the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments¹⁴¹ are few in the SCS, but as it is a recent convention, 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 yet, the oil and gas industry has prepared guidelines for the prevention and management of alien invasive species.¹⁴² This paper provides guidance on Aquatic Invasive Species (AIS) prevention and containment in onshore and offshore projects and operations. It includes a list of species that are identified as potentially particularly invasive and identify pathways for travel of AIS within oil and gas activities.

2.6 Platform and pipelines decommissioning¹⁴³

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.¹⁴⁴ 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 1989¹⁴⁵, thus before UNCLOS came into force in 1994. These IMO guidelines recall 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 structures of less than 4000 in air (excluding the deck and superstructure, that is less than 4000t as jacket weight) have to be removed if either they are in less than 75m of water or are in less than 100m and have been emplaced after 1 January 1998.¹⁴⁶ 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 set.¹⁴⁷ With regards to effect on the

¹⁴¹ Available at <http://cil.nus.edu.sg/2004/2004-international-convention-for-the-control-and-management-of-ships-ballast-water-and-sediments/>

¹⁴² IPIECE/OGP (2010) Alien invasive species and the oil and gas industry, Guidance for prevention and management, OGP Report Number 436, available online at <http://www.ogp.org.uk/pubs/436.pdf> (last accessed on 29 April 2011)

¹⁴³ For a detailed review of the topic, refer to M.A.Ayoade (2002) Ibid

¹⁴⁴ Youna Lyons (2011), Ibid

¹⁴⁵ IMO Assembly Resolution A.672(16) adopted on 19 October 1989, available online at <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/> (last accessed on 31 August 2011).

¹⁴⁶ Unless the entire removal is not technically feasible or would involve extreme cost, or an unacceptable risk to personnel or the marine environment (Article 3.5 IMO Resolution A.672(16), Ibid)

¹⁴⁷ This analysis must include potential effect on the safety or 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.

marine environment, the guidelines also 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 to be motivated by extreme cost or unacceptable risk. It must 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 future damages are clearly established.

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

- (i) the new 1996 Protocol¹⁴⁸, 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'¹⁴⁹, adopts a precautionary approach, and the polluter pay principle¹⁵⁰;
- (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 section and are applicable to the disposal of offshore oil and gas installations or platforms¹⁵¹; and,
- (iii) specific guidelines for assessment of platforms or other man-made structures at sea¹⁵². These latter guidelines are also part of a series of specific guidelines.

While the London Convention has, in the SCS, only been ratified by the Philippines and China and the 1996 Protocol only by the latter, coastal States have an obligation to implement the rules and standards of the London Convention and 1996 Protocol by virtue of Article 210(6) UNCLOS (see section 1.5 above).

Another key issue with respect to platform decommissioning is the determination of the legal entity in charge of the process. Consistent with the provisions of the 1996 Protocol to the London Convention, the current practice is to attempt to include provisions on this in the initial contract signed with the operator. This is to avoid a common difficulty encountered for many of the installations or structures in need of decommissioning or about to be because this point was left outside the scope of the contractual documentation, leaving the coastal State with the costly responsibility.¹⁵³ It is a particularly acute problem for most, if not all, of the old platforms in need of decommissioning on the continental shelf of coastal States of the SCS.

It must be noted that there are neither international nor regional rules or standards on the decommissioning of underwater oil or gas pipelines.

¹⁴⁸ For more on this topic, Z.Gao (2000) *Environmental Regulation of Oil and Gas*, Published by Kluwer Law International Ltd, London, UK: 15

¹⁴⁹ Article 1(4.1)(4) 1996 Protocol Ibid

¹⁵⁰ Article 3.1 and 3.2 1996 Protocol Ibid

¹⁵¹ Adopted at the 22nd Consultative Meeting of the Contracting Parties to the London Convention in 2000

¹⁵² Adopted at the 23rd Consultative Meeting of the Contracting Parties to the London Convention in 2001

¹⁵³ B.A.Hamzah Ibid p.343 and Brian Twomey ibid

3 Spatial planning for protection: sensitive areas and migratory routes

3.1 General guidelines

The primary use of spatial planning in offshore oil and gas activities is the allocation of blocs by coastal States for the exploration and development of offshore oil and gas activities on their continental shelf. But the same concept can also be used for protection, for instance in excluding some areas from development in order to preserve them. Such practice would be consistent with the obligation of conservation of the marine environment provided in several widely ratified international treaties.

Coastal States of the SCS have an obligation to take measures necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. Another express reference to spatial planning for the protection of the marine environment is made in UNCLOS with respect to the enforcement of regulation on pollution from vessel in a coastal State's EEZ. Coastal States can propose the designation of an area under specific rules consistent with international law or standards, to be confirmed by the relevant organisation (the IMO) and after consultation with other States concerned. To proceed, coastal States must demonstrate reasonable grounds for believing that a particular, clearly defined area of their EEZ requires special mandatory measures. These may be based on recognized technical specificities distinct to the oceanographical and ecological conditions within the area, its utilization or protection of its resources and the particular character of its traffic.¹⁵⁴ This latter provision is generally considered as the legal basis for Particularly Sensitive Sea Areas (PSSA), a spatial planning tool reviewed below.

In the 1992 Convention on Biological Diversity (CBD), coastal States committed to endeavour to develop national strategies, plans or programmes for the conservation and sustainable use of marine biological diversity and integrate the conservation and sustainable use of marine biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.¹⁵⁵ States parties also committed to provide *in-situ* conservation¹⁵⁶, which includes developing a detailed programme and guidelines for that purpose.¹⁵⁷ Although the language of the CBD is

¹⁵⁴ Article 211(6) (a) UNCLOS Ibid

¹⁵⁵ Article 6 General measures for conservation and sustainable use in the Convention on Biological Diversity, available online at http://cil.nus.edu.sg/rp/il/pdf/1992_Convention_on_Biological_Diversity-pdf.pdf (last accessed on 22 June 2011).

¹⁵⁶ Article 8 CBD, Ibid

¹⁵⁷ Parties commitments include: '(a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;
(b) Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity;
(c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas with a view to ensuring their conservation and sustainable use;
(d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;
(e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas;
(f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, *inter alia*, through the development and implementation of plans or other management strategies;
(...)
(h) Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species;

focused on the protection of biodiversity in general and does not specify how sustainable development should be implemented and articulated for the protection of marine biodiversity, the subdivision and allocation of all or most of a coastal State's continental shelf to oil and gas concessions would for instance appear incompatible with the commitments taken in the CBD. The allocation of substantial parts of this area to biodiversity protection, following a scientific selection process designed to ensure that the selected areas represent the marine biodiversity of the marine systems concerned, would seem more consistent. This is further confirmed by decisions 28 and 30 of the seventh Conference of the Parties (COP) to establish and maintain by 2012 for marine areas, comprehensive, effectively managed and ecologically representative national and regional systems of protected areas¹⁵⁸, representing at least 10% of each of the world's ecological regions effectively conserved.¹⁵⁹ Alternatively, or in complement, other mechanisms can be relied on to ensure that development occurring in proximity of marine sensitive areas would have limited adverse impacts. The designation of Particularly Sensitive Seas Areas (PSSA) through the IMO can be useful in that respect.

3.2 Protected areas and migratory routes

The 1971 Convention on Wetlands of International Importance especially as Waterfowl Habitats (a.k.a Ramsar Convention)¹⁶⁰ also calls for marine spatial planning through the designation of one or more wetlands of international importance in terms of ecology, botany, zoology, limnology or hydrology¹⁶¹, as well as the establishment of nature reserves on wetlands even if not of international importance.¹⁶² Widely ratified globally as well as regionally (by coastal States of the SCS), this Convention brings the Parties together at Conferences of the Parties where resolutions and recommendations are adopted. Resolution X.26 of the tenth COP (COP10), which is solely devoted to wetlands and extractive industries, emphasizes the importance of Strategic Environmental Assessment approaches (point 14), Environmental Impact Assessment (point 15) and ensuring that private parties involved are aware of

(i) Endeavour to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components;

(...)

(k) Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations;

(l) Where a significant adverse effect on biological diversity has been determined pursuant to Article 7, regulate or manage the relevant processes and categories of activities; (...)'

(Article 8 CBD)

¹⁵⁸ Convention on Biological Diversity, Decision COP VII/28 point 18, available online at

<http://www.cbd.int/decisions/cop/?m=cop-07>

¹⁵⁹ Convention on Biological Diversity, Decision COP VII/30 point 11 and Annex II, available online at

<http://www.cbd.int/decisions/cop/?m=cop-07>

¹⁶⁰ The term 'Wetlands' is defined widely and includes marine and estuarine wetlands (Article 1 provides: "*For the purpose of this Convention wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.*"), whether artificial or natural. Marine areas can be considered as wetlands under the Convention as long as the depth is not more than 6 meters at low tide. However, pursuant to article 2 that further defines wetlands boundaries, the wetland can extend beyond the 6 meters depth limit. Ramsar wetlands can "*incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than 6 meters at low tide lying within the wetlands, especially where these have importance as waterfowl habitat*". It must be noted that it arguably applies solely to the territorial sea of coastal States and thus not to mining activities taking place in EEZ. It is available online at http://www.ramsar.org/cda/en/ramsar-documents-texts-convention-on/main/ramsar/1-31-38%5E20671_4000_0 (last accessed on 3 July 2011).

¹⁶¹ Article 2.2 Ramsar Convention, Ibid

¹⁶² Article 3.1 Ramsar Convention, Ibid

obligations under Ramsar (point 18) and to complete national wetland inventories (point 23) and map Ramsar site (point 24).¹⁶³ The creation of new wetlands or the improvement of existing ones in the post-closure phases of extractive activities through restoration programmes for instance are also strongly encouraged (point 26). Ramsar sites in the SCS and adjacent seas are few to date: Pulau Kukup and surrounding waters, Malaysia (Straits of Malacca), Tubbataha Reefs National Marine Park, Philippines (Sulu Sea) and Kuching Wetlands National Park, Malaysia (off Borneo).¹⁶⁴ Many more wetlands located in the SCS have been designated by coastal States without specifying that they would be of international importance. Louisa Reef Wildlife Sanctuary, located off Brunei and subject to overlapping claims is a good example of a marine park potentially exposed to environmental risk from oil and gas activities.¹⁶⁵ However, it is quite unique in its location on an area subject to overlapping claims. Furthermore, unlike the others, it is located within the EEZ, around a reef likely covered at high tide, rather than around an island. The type of protection offered to these areas vary depending on the coastal State's national legislation¹⁶⁶, which will also determine where oil and gas concessions are granted and in what terms a marine protected areas could coexist with such activities.

Outside designated wetlands protected under Ramsar, the 1979 Convention on the Conservation of Migratory Species of Wild Animals (the CMS or Bonn Convention) aims at the conservation of migratory species, including marine species and provides additional guidance for spatial zoning for that purpose.¹⁶⁷ Appendix I to the CMS Convention lists endangered species, the habitat of which must be conserved and where possible restored¹⁶⁸. Migratory species listed in Appendix II concern species, which have an unfavourable conservation status. For each given specie, protection rules are agreed between range States, including States that are not a party to the initial convention. Although the CMS Convention has, among coastal States of the SCS, only been ratified by the Philippines, many are taking part in discussions led by the Convention and recently several Memorandums of Understanding relating to the conservation of specific species or families of marine fauna, such as marine turtles (2001)¹⁶⁹

¹⁶³ Resolution X.26 COP10 is available online at http://www.ramsar.org/pdf/res/key_res_x_26_e.pdf (last accessed on 3 July 2011)

¹⁶⁴ Information on Ramsar sites can be found on Ramsar website: <http://ramsar.wetlands.org/GISMaps/WebGIS/tabid/809/language/en-US/Default.aspx> (last accessed on 3 July 2011)

¹⁶⁵ The database of the world's Marine Protected Areas created jointly by WWF, UNEP, WCMC, IUCN and Sea Around US Project shows many protected areas in the SCS and adjacent seas including Louisa Reef. Web-link to the marine parks in the SCS:

http://www.mpaglobal.org/index.php?action=searchResults&search_text=&txt_site_name=on&txt_designation_type=on&country_id=&geo_type=LME&geo_id=43&conv_code=&adv=0&action=searchResults&submit=Search&des_nat=on&des_des=on&des_informal=on&marinec=&no_take=&m

¹⁶⁶ While coastal States are free to limit activities and shipping through marine protected areas located in their territorial seas, UNCLOS limits their powers in the EEZ. They have jurisdiction to create protected areas designed to the protection of their living resources but likely not to prevent sailing through areas surrounding seamounts or reefs for the sake of preservation of a sensitive environment, unless through PSSA validated by the IMO. (Articles 56(1)(a) and 73, and 211(6) UNCLOS). Some authors are of the view however that if such protected area was to protect endangered biodiversity, the restriction of UNCLOS could be lifted pursuant to Article 22 of CBD (A.Boyle (2005) Further development of the Law of the Sea Convention: mechanisms for change, ICLQ vol.54: 579).

¹⁶⁷ Available online at <http://www.cms.int/documents/index.htm> (last accessed on 5 August 2011)

¹⁶⁸ Article III (4)(a) CMS Convention

¹⁶⁹ The Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia puts in place a framework through which States of the Indian Ocean and South-East Asian region, as well as other concerned States, can work together to conserve and replenish depleted

and dugongs (2007),¹⁷⁰ have been signed. The location of their migratory routes and their vulnerability to impact from offshore oil and gas activities are thus relevant. The extent to which they are built into the applicable national law and /or practical measures taken by offshore oil and gas companies is however unclear.

3.3 Particularly Sensitive Sea Areas (PSSA) and Special Areas (SA) under MARPOL

The designation of PSSA and SA under MARPOL are another form of spatial planning with similar effects than provisions in national legislation to route pipeline or cable laying in order to protect particular habitat or avoid areas devoted to other uses. However, unlike the grounds for spatial planning previously considered, the designation of a SA or a PSSA is left to the initiative of coastal States. They are only tools offered to coastal States wishing to limit environmental risk from pollution from vessel. Subject to the IMO giving its agreement, they allow for protective measures to be imposed and restrict to some extent the freedom of navigation accordingly. PSSAs are seen by some as an application of the precautionary principle by the IMO.¹⁷¹

Under the MARPOL Convention, 'Special Areas' may be identified where restricted discharge standards will then be imposed.¹⁷² PSSAs are of a different nature in that they do not result from the provision of a single treaty but allows the cumulative application of navigational measures under several IMO Conventions.¹⁷³ A PSSA is an area that needs special protection through action by IMO because of its significance for recognised ecological, socio-economic, or scientific reasons and which may be vulnerable to damage by international shipping.¹⁷⁴ Consideration should also be given to the potential for the area to be listed on the World Heritage List, declared a Biosphere Reserve, or included on a list of areas of international, regional, or national importance.¹⁷⁵ A proposed PSSA may include within its boundaries a buffer zone for which specific protection from shipping is sought.¹⁷⁶ Potential Associated Provisional Measures (APM) include ships' routing, the designation of Areas To Be Avoided, Transit Separation Schemes, Ship Reporting Systems and Vessel Traffic Services.¹⁷⁷ The development of PSSAs is recent and only 11 such areas have been designated to date. Another

marine turtle populations for which they share responsibility. This objective will be achieved through the collective implementation of an associated Conservation and Management Plan. Site of the IOSEA <http://www.ioseaturtles.org/introduction.php>

¹⁷⁰ Currently dugongs are classified as vulnerable to extinction under the 2009 World Conservation Union (IUCN) Red List of Threatened Species, which indicates that they face a high-risk of extinction in the wild in the medium-term future. Two meetings of the CMS Conference of the Parties provided the impetus to develop an appropriate legal instrument, including a conservation and management plan, to conserve the dugong under CMS auspices. The initiative to develop such an instrument was led by the Governments of Australia and Thailand, in close coordination with the CMS Secretariat. The MoU on the Conservation and Management of Dugongs (Dugong dugon) and their Habitats throughout their Range is serviced by the UNEP/CMS Abu Dhabi Office being hosted by the Government and the Environment Agency of Abu Dhabi (EAD): <http://www.cms.int/species/dugong/index.htm> (last accessed 4 July 2011).

¹⁷¹ B.Sage (2006) Precautionary Coastal States' Jurisdiction, *Ocean Development and International Law* 37: 359-386 (373-374)

¹⁷² See section 2.2.2 above

¹⁷³ B.Sage Ibid, 374

¹⁷⁴ IMO Resolution A.982 (24), Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas, adopted Dec.1 2005

¹⁷⁵ IMO Assembly Resolution A.982(24) adopted on 1 December 2005, Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (A 24/Res.982), Section 6.2

¹⁷⁶ IMO Assembly Resolution A.982(24), Ibid, Section 6.3

¹⁷⁷ B.Sage Ibid, 378-379

enclosed sea, the Baltic Sea, has been designated as a Special Area under MARPOL Annex I, V and VI¹⁷⁸ as well as a PSSA¹⁷⁹. The Mediterranean Sea is another enclosed sea of a similar size to the SCS, which is subject to intensive and diverse maritime and marine uses (including major shipping and fisheries) and has been designated as Special Area under MARPOL Annex I and V.¹⁸⁰ Sensitive environments such as the Galapagos archipelago and the Great Barrier of Reef are also useful examples in the context of the protection of the marine environment of the SCS and adjacent seas.

Designating the SCS as a Special Areas under MARPOL and parts of it as PSSAs could assist in decreasing the exposure or at the minimum the magnitude of the environmental risk created by busy shipping activity. Also suggested for the conservation of marine biodiversity in the Vietnam Sea¹⁸¹, such measures could be particularly appropriate for the SCS given the exceptionally high marine biodiversity of the area and the high reliance of its coastal population on the marine resources. In the context of oil and gas activities, this could also decrease the risk of environmental casualties from traffic from and to offshore platforms and possibly even influence or prioritise offshore oil and gas development locations. However, the effectiveness of such measures depends on compliance with applicable international measures.

While the lack of data has long been seen as a major obstacle to ocean spatial planning, the multiplication of tools available to study the ocean and the seabed and of initiatives deployed to that effect demonstrate that it no longer is a major obstacle. Even for the less studied SCS substantial data and expertise has been gathered on which a spatial planning program could rely. These include international¹⁸², regional¹⁸³, bi-national¹⁸⁴ and numerous national initiatives through academic research¹⁸⁵. The sensitivity of coastal States on their sovereignty

¹⁷⁸<http://www.imo.org/OurWork/Environment/PollutionPrevention/SpecialAreasUnderMARPOL/Pages/Default.aspx>

¹⁷⁹ On 22 July 2005, Resolution MEPC.136(53), available online at http://rise.odessa.ua/texts/MEPC136_53e.php3,

¹⁸⁰<http://www.imo.org/OurWork/Environment/PollutionPrevention/SpecialAreasUnderMARPOL/Pages/Default.aspx>

¹⁸¹ Du Van Toan (2010) PSSA – Management tool for marine biodiversity conservation in the Vietnam Sea, Proceedings of the International Conference Marine Biodiversity of East Asian Seas: Status, Challenges and Sustainable Development Nha Trang Decembre 6-7: 54-58

¹⁸² e.g. the Census Of Marine Life (<http://www.coml.org/>) and the Global Ocean Biodiversity Initiative, GOBI (<http://www.gobi.org/About>)

¹⁸³ e.g. UNEP/COBSEA (2010) State of the Marine Environment Report for the East Asian Seas 2009, Ed. L.M. Chou, COBSEA Secretariat Bangkok 156p (ISBN: 978-92-807-3070-8), 2010 International Conference on Marine Environment and Biodiversity Conservation in the SCS, National Sun Yat-sen University, Kaohsiung, Taiwan, or the Coral Triangle Initiative (CTI)

¹⁸⁴ e.g. Philippines-Vietnam Joint Oceanographic and Marine Scientific Research Expedition in the SCS, JOMSRE I to IV and the Philippines-Malaysia jointly managed Turtle Islands Heritage Protected Area (see for instance A.A.Encomienda (2006) Marine Environmental Protection in the South China Sea: An UNCLOS Paradigm, in Recent Developments in the Law of the Sea and China, Koninklijke Brill NV, Leiden, The Netherlands.)

¹⁸⁵ For an overview of research on the protection of the Spratlys, see J.W. McManus (2010) Towards establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Activities with an Emphasis on the Role of Taiwan, *Ocean Development and International Law* 41: 270-280; J.W. McManus (1997) The proposed international Spratly island marine Park: ecological considerations, *Proc 8th Int Coral Reef Sym 2*: 1943-1948; P.M.Alino et al. (2006) Moving towards a network of marine sanctuaries in the South China Sea: a view from the Philippine Shores, *Proceedings of 10th International Coral Reef Symposium: 1947-1982*; S.T. Vo et al. (2006) Coral reefs of Vietnam : recent status and conservation perspectives, *Proceedings of 10th International Coral Reef Symposium: 1045-1054*, and Y. Herdiana et al. (2008) Systematic Marine Conservation Planning: towards a marine representative areas network in Nangguruh Aceh Darussalam, Indonesia, *Proceedings of 11th International Coral Reef Symposium: Session 23*; The last 4 are available online at <http://www.reefbase.org>

and their reluctance to restrain it in any way has prevented an agreement on the management of the living and non-living resources from being reached in areas subject to overlapping claims that result from disputes of sovereignty over islands and reefs (namely the Spratlys Island area, Scarborough reef and Paracel Islands).

4 Local implementation and practices

4.1 Guidance from international principles of law and international instruments

Arguably, a new regional treaty for offshore oil and gas activities would primarily implement existing principles, rules of international law and international standards with respect to the protection of the marine environment. This is what the OSPAR¹⁸⁶ did for the North Atlantic when it upheld:

- The Precautionary Principle;
- The Polluter Pays Principle;
- Best Available Techniques and Best Environmental Practice;
- Prevention of an increase of pollution outside the convention area.

Modern regulatory tools needed in order to implement these principles include:¹⁸⁷

- Environmental Impact Assessments (EIA), recognised as the most effective approach to environmental management and protection designed to inform the decision makers of the potential effects on the environment of the proposed petroleum project and give the industry the information for mitigation of likely environmental damage;
- An environmental management plan or programme;
- Environmental reports to be filed by petroleum operators at specified times along the operations;
- Environmental Assurance programs;
- Decommissioning and abandonment fund or plan;
- Environmental monitoring and audit.

These principles and mechanisms all need to be implemented within national legislation along with ratified international treaties and all international rules, standards and recommended practices and procedures relating to pollution from seabed activities and by dumping, whether they have been ratified or not (see section 1.5 above).

4.2 Industry standards

The oil and gas industries use a large number of standards developed (i) by industry organisations, (ii) through national and international standardization bodies; and, (iii) by individual companies in the industries. Each of these categories include diverse and numerous sets of guidelines and/or standards. Industry organisations themselves have adopted hundreds of standards, some specific to some equipment and material and the associated operated practice (such as the American Petroleum Institute (API) Recommended Practices and Specifications). Other standards adopted locally, regionally or internationally are for non-specific equipment and have been developed by organisations such as the American Society of

¹⁸⁶ OSPAR, the 1992 Convention for the Prevention of the Marine Environment of the North-East Atlantic, 22 September 1992, reprinted in 32 ILM 1069 (1993).

¹⁸⁷ Z.Gao (1997) Environmental Regulation of the Oil and Gas Industries, Journal of The Centre for Energy, Petroleum and Mineral Law and Policy (CEMPLP), available online at <http://www.dundee.ac.uk/ceplmp/journal/html/vol2/vol2-11.html> (last accessed on 5 July 2011)

Mechanical Engineers (ASME). Others, more general, define environmental best practices and guidelines such as the International Association of Oil and Gas Producers (OGP), The International Petroleum Industry Environmental Conservation Association (IPIECA), the Australian Petroleum Production and Exploration Association¹⁸⁸ and even the International Organisation for Standardization¹⁸⁹. OGP's position is that the industry needs to better develop and use international standards and minimise company specifications. Their view is that the use of supplementary requirements in company specifications must serve a clearly transparent purpose and be by exception only.¹⁹⁰

The importance of industry standards is reflected in the IMO's own guidance for the Application of Safety, Security and Environmental Protection Provisions to FPSOs and FSUs, which refer expressly to Competence Assurance Guidelines for FPSO developed by OCIMF (Oil Companies International Maritime Forum) from 2009 and Guidelines for Managing Marine Risks Associated with FPSOs, developed by OGP.¹⁹¹

It is unclear which of these international or company standards are used in the oil and gas legal documentation in the SCS with respect to the protection of the marine environment and which are effectively respected. Engaging in discussion with the industry could provide some answer.

4.3 Implementation in national laws

Coastal States are responsible for implementing international and regional rules, standards and guidelines. Research shows that environmental requirements in developing countries tend to be general and contain gaps. As an example, Indonesia's production sharing agreement merely make the contracting party 'responsible for the preparation and execution of the Work Program, which shall be implemented in a workmanlike manner and by appropriate scientific methods, and the Contractor shall take the necessary precautions for protection of navigation and fishing and shall prevent excessive pollution of the sea or river.'¹⁹² This is further confirmed in a recent study by the World Bank on Environmental Governance in Oil-Producing Developing Countries (including Cambodia, China, Indonesia, Philippines and Thailand). One of the findings is that the environmental policy and legal framework is largely theoretical, although on paper it appears to have been transposed from benchmark countries.¹⁹³ The report also identifies that the effectiveness of the regulatory framework is compromised by the lack of a sufficiently organised administrative structure that enable regulatory compliance and

¹⁸⁸ It adopted a Code of Environmental Practice in October 2008.

¹⁸⁹ 145 ISO standards have been published for the industry. For a poster presentation of ISO Standards for use in the oil and gas industry <http://www.ogp.org.uk/pubs/440.pdf>

¹⁹⁰ OGP (2010) Position paper on the development and use of international standards Report 381 accessible online at <http://www.ogp.org.uk/pubs/381.pdf>

¹⁹¹ MSC-MEPC.2/Circ.9, 25 May 2010, available online at <http://www.veristar.com/content/static/veristarinfo/images/4203.1.MSC-MEPC%5B1%5D.2-Circ.9.pdf> (last accessed 4 July 2011)

¹⁹² Z.Gao (2000) Ibid: 231

¹⁹³ The study reviewed and compared the oil and gas governance framework of 27 developing oil producing countries with a view to identify areas where the World Bank can provide assistance to improve environmental governance and management systems.

http://siteresources.worldbank.org/EXTOGMC/Resources/336929-1266963339030/eifd17_environmental_governance.pdf

enforcement¹⁹⁴; the lack of resources being outlined as a key factor. Whether an environmental assessment process is legislated upon and the way in which it does vary greatly but implementation is reported as generally weak. Treatment of platform decommissioning and liability for later contamination is little to non-existent. Public disclosure and public involvement in decision making is also generally weak. Long-term impacts do not appear to be factored in. A review of the legal and governance framework of the coastal States of the SCS would help clarify gaps and weaknesses and possibly assist in regional initiatives.

The national law of the coastal State whose continental shelf is being explored will define the rules applicable to concessions and conditions for development and production¹⁹⁵. However, in addition to these rules, offshore installations must also comply with applicable rules from the flag State and Classification Society Rules and Regulations (if a mobile platform). Finally, given that Operator(s) to whom the concession is granted delegate(s) execution to a diversity of vendors or subcontractors, these third parties must also comply with the standards, guidelines and requirements defined by the Operator.

The determination of applicable laws and regulation to offshore installations located in disputed areas of the SCS is more problematic. While in practice it might follow the law of the coastal States who granted the concession to the Operator, the entitlement of this country can be later challenged and damages sought if adverse impacts were to result from the operations. Furthermore, the mere drilling appears prohibited under international law until parties agree on joint development, if not on boundaries.¹⁹⁶

4.4 Regional institutions and governance framework

Regional institutions and governance framework are at an early stage of development with regards to offshore oil and gas activities in the SCS, although meaningful initiatives can be acknowledged in addition to the discussions on boundaries and joint development.¹⁹⁷

The ASEAN Council on Petroleum (ASCOPE) was established on 15 October 1975 by the then Member States of the ASEAN and joined in 2006 by all the other members. The mission statement of ASCOPE 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 represent their country within ASCOPE. After Pertamina acted as Secretariat for ASCOPE, Petronas is now in charge. Seven specialised working committees have been

¹⁹⁴ This is also argued by Z.Gao. Reference is made to the lack of staff to administer existing regulation in the Department of Mineral Resources of Thailand resulting in international oil companies operating under no real obligation to respect the environment (Ibid: 231-232).

¹⁹⁵ The national law normally applicable can sometimes refer to another national for oil and gas activities carried out in an area covered by a joint-development agreement such as between Vietnam and Malaysia (Refer to section 1.3)

¹⁹⁶ This is the position taken by the arbitral award rendered in the Guyana-Surinam international arbitration case, on the basis of Article 83(3) UNCLOS. The arbitrators took the view that the duty of claimants to make every effort [...] not to jeopardise or hamper the reaching of the final agreement would preclude the unilateral conduct of activities that cause a permanent physical change of the marine environment. Whilst unilateral seismic surveying would be allowed, drilling would not be. The unilateral installation of fixed platforms on the seabed would not be a permissible act either under this construction of Article 83(3) of the UNCLOS. Refer to the arbitral award rendered on 17 September 2007, in the Case between Guyana and Suriname, para.466 to 468 available online at http://www.pca-cpa.org/upload/files/Guyana-Suriname_Award.pdf (last accessed on 21 July 2011)

¹⁹⁷ Youna Lyons (2011), Ibid, sections 3 and 4

Youna Lyons

Centre for International Law

OG in SCS/Part 2

31 August 2011

created:

- Exploration and Production Business Development Committee;
- Processing and Refining Business Development Committee;
- Trading and Marketing Business Development Committee;
- Technology and Services Committee;
- Trans-ASEAN Gas Pipeline Task Force;
- ASEAN Gas Consultative Council;
- ASCOPE Gas Centre.¹⁹⁸

One of ASCOPE's current projects is the crafting of regional decommissioning guidelines tailored to the ASCOPE countries with full concurrence and mutual approval by the relevant National Oil Companies in accordance with the international laws and regulations and complying with the national legislations of each member country.¹⁹⁹

The frequently mentioned 2002 Declaration on the Conduct of the Parties in the SCS signed between the ASEAN and China includes marine environmental protection and marine scientific research among the topics for implementation, pending a comprehensive and durable settlement of the disputes.²⁰⁰

Several meetings have also been organized or sponsored through the years by the Asia Pacific Economic Cooperation (APEC)²⁰¹. The last one was held in Singapore, on oil spill response and planning in March 2004.²⁰² APEC's Marine Resources Conservation Working Group also appears active but reports of its work are generally not made public.

While the oil and gas industry organisations are active, structured and dynamic in other parts of the world with respect to environmental impacts from offshore oil and gas activities, such initiatives seem limited in the SCS. SEAPEX, the South East Asia Petroleum Exploration Society, is an example of a regional and dynamic forum in which environmental impacts from oil and gas offshore activities, international standards and regulations and best practices could be given more importance.²⁰³ However, the *ad hoc* Drilling Fluids and Cuttings Management Asia Forum held in Bangkok on 22-24 February 2011 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.²⁰⁴ No follow-up has however been published, nor insights on the main lines of the discussion and national perspectives.

Public-private projects focusing on a specific area can also be useful. 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 geographical

¹⁹⁸ <http://www.ied-asean.com/upload/WO127.pdf> (last accessed on 29 April 2011)

¹⁹⁹ ASCOPE website: <http://ascope.org/>

²⁰⁰ Point 6 of the Declaration on the Conduct of the Parties. (available online at <http://cil.nus.edu.sg/2002/2002-declaration-on-the-conduct-of-parties-in-the-south-china-sea-signed-on-4-november-2002-in-phnom-penh-cambodia-by-the-foreign-ministers/>) (last accessed on 3 July 2011)

²⁰¹ An intergovernmental forum of 21 member economies around the Pacific Rim, established in 1989.

²⁰² <http://www.boemre.gov/international/APEC.htm>

²⁰³ They are for instance not mentioned in the objectives found on the website: <http://www.seapex.org/>

²⁰⁴ <http://www.prtoday.com/news/84916/> or <http://www.free-press-release.com/news-top-asian-drilling-regulators-converge-in-bangkok-1297068614.html> (last accessed on 29 April 2011)

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 partnership with major stakeholders including oil and gas companies in Indonesia, Malaysia and the Philippines.²⁰⁵

5 Conclusion

Based on the ASEAN's methods to date, it seems that the preferred path for action is one of increased cooperation and exchange through non binding declarations, rather than a new binding treaty. However, the frequency and magnitude of environmental risks are increasing, as a result of the growth of offshore oil and gas production and infrastructure in the SCS. The generally increasing intensity and depth of intervention and the increase in intensity of all marine and maritime uses of the SCS are important factors in this increase in risk. The paramount issues identified in this paper are recapitulated below.

5.1 A fragmented international regime

The inconsistencies and gaps created by a lack of international and regional regulations on seabed activities need to be addressed. The most critical matter for attention is the need for homogeneity between oil and gas production from fixed as opposed to mobile platforms. Current regulations and standards focus primarily on the characteristics of the device used for development and production rather than the activity being carried out. There are very few international rules applicable to environmental harm from activities carried out on fixed platforms.

Notable exceptions are MARPOL Annex I and V, which apply respectively to the discharge of oil and of solid waste from fixed and floating platforms. However, other noxious substances and solid wastes arising from oil and gas exploration and production are not consistently nor comprehensively dealt with. Export of oil is not subject to a consistent regime given the limited scope of application of the 1992 CLC Convention and the 1992 IOPC-FUND Convention.

The discharge of non-oil noxious substances (such as produced water, drilling fluids and offshore processing drainage) and sewage from a fixed or floating platform do not fall within the scope of existing international treaties, except for anti-fouling from ships. The treatment of drill cuttings is also unclear, both during drilling (whether at exploration or production stage) and at the time of decommissioning.

5.2 Implementation in national laws of mandatory standards and recommended practices contained in unratified treaties

While the overall legal framework applicable to the management of environmental impact from offshore oil and gas activities is patchy and complex, it still includes many clear obligations for coastal States, including the implementation of international treaties, standards and recommended practices and procedures relating to pollution from seabed activities and by dumping. Implementing these is a first important step.

²⁰⁵ E.F.B. Miclat and R.B. Trono (2008) in *One vision, one plan, common resources, joint management Conserving the Sulu-Sulawesi Sea, Tropical Coasts Vol.15 No1: 4-10*

They include the implementation of standards from the 2001 Bunker Convention, the 1996 LLMC, the 2001 AFS Convention, MARPOL Annexes III to V, the London Convention and the 2004 BWM Convention insofar as they relate to pollution connected to seabed activities.

5.3 Unratified treaties, the ratification of which is desirable

The ratification and implementation of additional treaties still not widely ratified in the SCS is another important step to be taken. This will involve the consideration of old and already widely ratified treaties globally as well as more recent ones that are important to limit environmental risks from oil and gas activities. They include the 1992 CLC Convention and the 1992 IOPC-FUND Convention by the few coastal States that have not yet done so as well as the more recent Annex VI of MARPOL (Table 1 below).

5.4 Consistency between national regimes, regional standards and compliance

Reports show national legislation of coastal States is not only incomplete but further suffers from being overly theoretical and from insufficient compliance. MARPOL Annex I, applicable to oil discharge from fixed and floating oil and gas platforms and the OPRC on oil pollution preparedness, oil spill response are examples of conventions ratified by nearly all the SCS coastal States, although the general compliance levels appears low. The lack of regional standards and consistency between national regimes is an additional source of weakness in the regional framework.

While a discussion of steps to promote compliance with existing national legislation goes beyond the scope of this paper, the documentation reviewed suggests that to improve compliance, a diversity of non legal measures will be necessary, including capacity building, improvement in the awareness of environmental impact and in the determination of ecological baselines and of acceptable levels of contamination based on a comprehensive and scientific analysis of impacts (including the whole surrounding food web and key groups such as meiofauna).

5.5 Regional gaps

The main gaps identified relate to platform decommissioning, the underwater pipeline network, social impacts from oil and gas activities and residual liability.

Apart from Malaysia's decommissioning guidelines, other coastal States do not appear to have adopted decommissioning regulation. Given the age profile, weight and water depth of many platforms in the SCS, coastal States are obliged to proceed to the total removal of many of them to comply with their international obligations under UNCLOS and IMO guidelines. However, given the general wording used in the international guidelines, regional guidelines and standards suited to local conditions are necessary.

Necessary steps also need to be taken to ensure that maintenance and impact from the pipeline network is dealt with. Social impacts are likely to become a bigger issue as the number of platforms increases and the intensity and number of conflicts between users rises. The residual liability arising post well abandonment and decommissioning also needs to be addressed and responsible entities need to be identified.

5.6 The deficit in political will

Failing some dramatic event such as an environmental catastrophe to stimulate the multilateral negotiations and cooperative actions called for by marine ecologists and many other users of the marine environment of the SCS, the limitation of environmental degradation may be better achieved through sectoral arrangements negotiated on a small scale.

**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)**

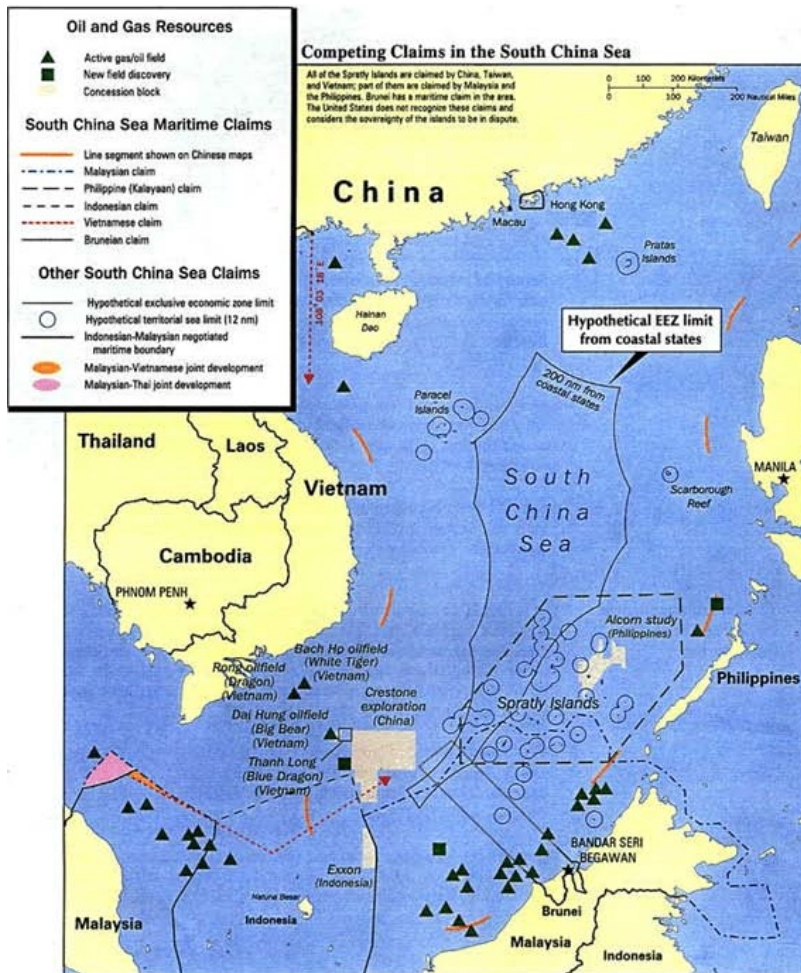
International Treaties		Adoption/Ratification/Accession (1)									Legend:	
		Brunei Darussalam	Cambodia	China(7)	Indonesia	Malaysia	Philippines	Singapore	Thailand	Viet Nam		
UNCLOS	United Nations Convention on the Law of the Sea 1982 (UNCLOS) and Agreement on Part XI	1996	signed in 1983	1997	1986	1996	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	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	N	1992	1992	1992	N	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	N	(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-V	Annex II-V	Annex II	Annex II-V	Annex II-V	Annex II-V	Annex II	Annex II		
	Nairobi International Convention on the removal of Wrecks 2007(Nairobi WRC) NYF(8)	No Annex III to V			No Annex III to 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>

Map and Table



Map 1 - South China Sea Maritime Claims

(Public map from the US Energy Information Administration, accessible at [http://ei-01.eia.doe.gov/emeu/cabs/South China Sea/pdf.pdf](http://ei-01.eia.doe.gov/emeu/cabs/South_China_Sea/pdf.pdf))

Country	Total	Types of Rigs									
		Fixed	Gravity Base	Jack up	Mono-tower	Semi-submersible	Stacked leg	Spar	Tension leg	Barges	FPSO
Indonesia	485	463		3	1		8		1		9
Thailand	265	260		1							4
Malaysia	249	237		2		2		1		4	3
Brunei	160	160									
Vietnam	46	40				1					5
China	120	98	1	1		1					19
Malaysia-Thailand JDA	15	14									1
Philippines	8	6	1								1
Cambodia	2										2 (?)
Total	1350	1278	2	7	1	4	8	1	1	4	42

Table 1 – Estimation and types of oil and gas platforms and installations in the South China Sea and adjacent seas

Data compiled from Brian Twomey (2010) Study assesses Asia-Pacific offshore decommissioning costs, Oil and Gas Journal, March 15: 51-55 and completed with the World Offshore Field Development Guide Database – Vol.2: Asia, India, Australasia & Far East, OPL, 2010