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Adjustment to the International Legal Regime on Regulation of Accidental Pollution from Offshore Petroleum Operations

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Adjustment of the International Legal Regime on Regulation of Accidental Pollution from Offshore Petroleum Operations

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Dedication

To God Almighty.

To my beloved wife Chrisie and our children; Tamaramieye Ryan, Tamaraefiye Jason, Tamaratena Kayla, Tamaraseri Shona and Tamarakari Sean.

Acknowledgment

First and foremost I thank God for being the beginning and end of this research. I am grateful to the Petroleum Technology Development Fund (PTDF) of the Federal Republic of Nigeria for the scholarship award for the research. Many thanks to the Bayelsa State government and the Niger Delta University, Nigeria for enabling me to undertake the doctoral programme. My Dougam Law Firm partners, Late Oronto Natei Douglas for making this research dream a reality and Chuks Lester Uguru for being supportive of the venture.

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Declaration

I, SIMON WARIKIYEI AMADUOBOGHA do hereby declare that I am the author of this thesis. I have personally consulted all the references cited, unless otherwise stated; that the work, of which this thesis is a record, has been done by me, and it has not been previously accepted for a higher degree.

Signed

Dated this 16th day of September 2015

Supervisors:

Dr. Sergei Vinogradov ……..

Prof. Peter Cameron ……

Abstract

Offshore petroleum exploration and production (E&P) activities are faced with both technical and environmental challenges. In spite of these challenges, offshore petroleum E&P are on the increase globally. These operations have not been accident free even with improved technology. Recent incidents like Montara blowout and Deepwater Horizon fire have more than ever before raised serious concerns about the safety of offshore oil and gas E&P. Key issues are the prevention of major hazards, emergency response and civil liability, and payment of compensation. These issues have greater implication when the impact is transboundary. There is a general consensus on the need to ensure safety of these operations globally. However, the international legal framework needed to achieve the objective is unresolved.

Looking at the extant international instruments relating to marine pollution from offshore oil and gas activities, there is a clear absence of global treaty on safety of offshore operations, civil liability and compensation. While there is general consensus on the need for safety of offshore oil and gas operations globally, opinions are divided on the necessity for global treaties. This thesis looks at the extant international legal framework at both global and regional levels with a view to identifying gaps in provisions on safety, civil liability and compensation.

The thesis finds that even in the post-Macondo era, there are no global treaties in relation to safety of offshore petroleum E&P to prevent accidental pollution, and to deal with issues of civil liability and compensation. Furthermore, most regional regimes have no specific provisions on accidental pollution from offshore operations and liability issues arising therefrom. The absence of provisions for civil liability, especially in cases of transboundary harm from offshore accidental pollution has created difficulty for affected nations and nationals.

This thesis proffers suggestion for international regulation of offshore petroleum operations to prevent accidental pollution, improve emergency response and guarantee prompt settlement of liabilities and payment of compensation. Accordingly, an international legal framework involving three levels of legal regimes is recommended as an effective way of preventing accidental pollution from offshore petroleum operations to protect marine environment and also ensuring that liabilities that may arise in the event of a major hazard are adequately addressed.

List of Abbreviations

A & NZ Mar L. J	Australian and New Zealand Maritime Law Journal
A.J.I.L.	American Journal of International Law
AGA	American Gas Association
All ER	All England Reports
Alta. L. Rev.	Alberta Law Review
Am Soc'y Int'l L. Proc.	American Society of International Law Proceedings
ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
Austl & N.Z Mar L.J	Australian and New Zealand Maritime Law Journal
Austl Min & Pet. L. J	Australian Mining and Petroleum Law Journal
BAT	Best available technique
BEP	Best environmental practice
BOEM	Bureau of Ocean Energy Management
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
BOP	Blow-out preventer
BP	British Petroleum
BSEE	Bureau of Safety and Environmental Enforcement
BSEE	Bureau of Safety and Environmental Enforcement

BSI	British Standard Institute
Case W. Res Int'l Law	Case Western Reserve Journal of International Law
CBD	Convention on Biological Diversity
CEPMLP	Centre for Energy, Petroleum and Mineral Law and Policy
CLC	Convention on Civil Liability for Oil Pollution Damage
CLEE	Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources
CLNI	Strasbourg Convention on Limitation of Liability in Inland Navigation
CMI	Comite Maritime International
CMI	Montara Commission of Inquiry
CMLA	Canadian Maritime Law Association
DNV	Det Norske Veritas
E&P	Exploration and production
EC	European Community
Ecology L.Q.	Ecology Law Quarterly
EEZ	Exclusive Economic Zone
EIA	Energy Information Administration
EIA	Environmental impact assessment
Emory Int'l. L. Rev.	Emory International Law Review
EMS	Environmental Management Systems
EMSA	European Maritime Safety Agency

EPA	Environmental Protection Agency
EPOL	Emergency Preparedness Offshore Liaison Group,
EU	European Union
FAO	Food and Agricultural Organisation
Fordham L. Rev	Fordham Law Review
FPSO	Floating Production Storage and Offloading
FSO	Floating Storage and Offloading units
FSU	Floating Storage Unit
GBSs	Gravity-based structures
Geo Int'l Envtl L. Rev	Georgetown International Environmental Law Review
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental
GIIP	Good International Industry Practice
HELCOM	Helsinki Commission
Hous. J. Int'l L.	Houston Journal of International Law
I.E.L.R	International Energy Law Review
IADC	International Association of Drilling Contractors
IAEA	International Atomic Energy Agency
IAOGP	International Association of Oil & Gas Producers
ICGJ	International Courts of General Jurisdiction
ICJ	International Court of Justice
ICJ Reports	International Court of Justice Reports

ICLQ	International Comparative law Quarterly
IELMT	International Environmental Law Materials and Treaties
ILC	International Law Commission
ILM	International Law Material
IMO	International Maritime Organisation
IOCs	International Oil Companies
IOGP	International Association of Oil and Gas Producers
IOPCF	International Oil Pollution Compensation Funds
ISO	International Organisation for Standards
ISO	International Standard Organisation
ITLOS	International Tribunal on the Law of the Sea
J. Env. L.	Journal of Environmental Law
J. Envtl. L. & Litig.	Journal of Environmental Law and Litigation
LLMC	Convention on Limitation of Liability for Maritime Claims
MARPOL	International Convention for the Prevention of Pollution from Ships
MMS	Minerals Management Service
MOB	Man overboard
MODU	Mobile Offshore Drilling Unit
N.Y.L. Sch. J. Int'l & Comp L.	New York Law School Journal of International and Comparative Law
NOPSA	National Offshore Petroleum Safety Authority

NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOSDRA	National Oil Spill Detection and Response Agency
NUJS L. Rev.	National University of Judicial Science (NUJS) Law Review
OBM	Oil based mud
OCES	Operators Co-operative Emergency Services
OCES	Operators Co-operative Emergency Services
OECD	Organisation for Economic Cooperation and Development
OPF	Organic Phase Drilling Fluids
OPF	Organic-Phase Drilling Fluids
OPFs	Organic Phase Fluids
OPOL	Offshore Pollution Liability Agreement
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation
OSPAR	Convention for the Protection of the Marine Environment of the North Atlantic
OSPAR JAMP	OSPAR Joint Assessment and Monitoring Programme
P&I	Protection and indemnity
PCA	Permanent Court of Arbitration
POPs	Persistent Organic Pollutants
PSA	Petroleum Safety Authority Norway

REMPEC	Regional Maritime Pollution Emergency Response Centre
Rev. Euro. Com & Int'l Envi. L.	Review of European Community and International Environmental Law
RHDI	Revue Hellénique de Droit International
RIAA	Reports of International Arbitration Awards
RIF	Risk influencing factors
ROVs	Remotely Operated Vehicles
San Diego L. Rev.	San Diego Law Review
SBM	Synthetic based mud
Scand Inst. of Mar. L.Y.B.	Scandinavian Institute of Maritime Law Year Book
SEMS	Safety and Environmental Management System Rule
SOLAS	International Convention for Safety of Life at Sea
SPE	Society of Petroleum Engineers
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
STOPIA	Small Tanker Oil Pollution Indemnification Agreement
Suffolk Transnat'l L.J.	Suffolk Transnational Law Journal
TLP	Tension Leg Platforms
TOPIA	Tanker Oil Pollution Indemnification Agreement
UK	United Kingdom of Great Britain
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme

UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNGA Res	United Nations General Assembly Resolution
UNTS	United Nations Treaty Series
US	United States of America
USCG	United States Coast Guard
Vand. J. Transnat'l L.	Vanderbilt Journal of Transnational Law
WBM	Water based mud
WMO	World Metrological Organisation
YbIEL	Yearbook of International Environmental Law

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Background

The oil and gas industry is characterised with high risk and disaster could strike at any time. Statistics show that the past three decades have witnessed global occurrence of large scale fatal accidents in every two to three years.[1] Despite the development of renewable energy there is continuous increase in the search for oil and gas. With the depletion of reserves onshore the search is increasingly being focused on oceans where there is said to be huge oil and gas reserves. Advancement in technology has driven exploration and production (E&P) to geographically and geologically complex deep and ultra-deep water environment. Presently, there are over 7000 offshore oil and gas installations globally with their ever present operational hazards. The Arctic with its extreme weather challenges is also witnessing increase in exploration activities.[2] The extreme environmental conditions associated with offshore oil and gas operations is a challenge to safety. Hence, occurrence of accidents resulting in serious marine pollution that could have transboundary impact and harm marine biodiversity remains a possibility.

Offshore E&P has impact on the marine environment through operational discharges that are permissible within acceptable level and quantities. These substances with implications on the

[1] Health & Safety Middle East, *The Three Cs of Oil and Gas Safety*, available at http://www.hsmemagazine.com/article.php?article_id=761 accessed 20 June 2013; RPS Energy, *Preventing Major Accidents in the Oil and Gas Industry*, P.1 (2010) available at http://www.rpsgroup.com/Energy/Services/Advisory/Downstream/pdf/RPS-Final-Hazard-White-Paper_Nov2010_combined.aspx accessed on 29 Aug. 13

[2] The Arctic is a very special environment with ice and very low temperature that would constitute a great challenge to response operations in the event of a major accident. It experiences more darkness and knowledge about its geology is still limited. Furthermore, it lacks support infrastructure like deep harbour and airport. See recent challenge faced by Shell as reported by Associated Press, 'Shell awaits damage report on vessel for arctic offshore drilling'10 July 2015 http://www.pennenergy.com/articles/pennenergy/2015/07/shell-awaits-damage-report-on-vessel-for-arctic-offshore-drilling.html?cmpid=EnlDailyPetroJuly132015&eid=290980379&bid=1118774 last visited 04 August 2015

environment range from drilling mud, drill cuttings to sewage. On the other hand, accidental pollution may occur as a result of pipeline rupture, tanker spillages, blowouts and collision with vessels docking platforms to load product as was the case of the Bonga oilfield incident in the Gulf of Guinea in November 2011. (See table 1)

Name of Accident	***Country of Accident***	***Cause***	***Size of Spill***	***Impact***
Santa Babara Channel, 28 January 1969	California, Unites State of America	Blowout caused by drilling error	About 100,000 barrels of oil	Non Transboundary
Chevron Main Pass Block 41 Platform 1970	Gulf of Mexico, United States of America	Blow out	65,000 barrels of oil	Non Transboundary
Bravo Blowout at Ekofisk, 22 April 1977	North Sea, Norway	Blowout caused by wrong installation of downhole safety valve	202,380 barrels of oil	Non Transboundary
Ixtoc I 3 June 1979	Campeche Bay, Mexico	Blowout	5,500,000 barrels	Transboundary impact on US waters
Alexander Kielland, March 1980	North Sea, Norway	Capsized due to fatigue/fabrication defects		Non Transboundary 123 persons killed
Piper Alpha 6 July 1988	North Sea, United Kingdom	Gas cylinder leak explosion ns fire	Huge fire	Non Transboundary167 persons
Funiwa No. 5 well, 17 Jan 1980	Nigeria	Blowout	200,000 barrels	Non Transboundary
Usumacinta 23 October 2007	Bay of Compache, Mexico, Gulf of Mexico	Collision with Kab-101 Platform	5,000 barrels	Non Transboundary 21 killed
Montara Well 27 August 2009	Timor Sea, Australia	Blowout caused by leak from well head	11.2-9million US Gallons	Transboundary impact in the Indonesian part of the Timor sea
Macondo Well 20 April 2010	Gulf of Mexico, United States	Wellhead blowout	4.9 million barrels	Non Transboundary 11 killed
Frade Field November	Brazil	Blowout caused by pressure spike	3,600 barrels	Non Transboundary

Bonga Field 20 December 2011	Gulf of Guinea, Nigeria	FPSO collision with Platform	40,000 barrels	Non Transboundary
KS Endeavour 16 January 2012	Gulf of Guinea, Nigeria	Gas explosion	Gas into flame	Non Transboundary 2 killed

Table 1: List of some notable offshore accidents and their causes

The causes of accidents in offshore oil and gas operations are several and are often caused by a combination of factors in the operation of the installations. For instance, accidents such as blowouts are not usually caused by a single failure or mistake, but by the confluence of a whole series or chain of errors.[3] According to a study on well operations, "blowout accidents are often initiated by errors induced by technical failures, unsafe working actions, or a combination of both."[4] The study noted that blowout accidents, by their nature, may be "originated in the complexity of the relationships involved with the design, procedures, environment, operations, and so forth."[5] The host of factors may be classified into technical, organisational and human. Therefore, safety regulations must target technical, organisational and human elements of offshore operations.

Despite the highly technical nature of offshore oil and gas operations, it is believed that about 80 per cent of causes of major accidents in the industry are not linked to technical factors but

[3] In Macondo blowout according to the reports, factors responsible include, inter alia, technical/design failures (the blow out preventer (BOP) failed to respond when activated) , individual missteps and oversights, institutional failure including regulators' lack of technical expertise to prevent the missteps, see National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *'Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling'*, Report to the President, pp114-126 (2011), available at http://www.oilspillcommission.gov/sites/default/files/documents/DEEPWATER_ReporttothePresident_FINAL.pdf accessed on April 26, 2012 and http://docs.lib.noaa.gov/noaa_documents/NOAA_related_docs/oil_spills/DWH_report-to-president.pdf accessed on 29 Aug. 13

[4] Xiali Haer, Midori Inaba and Kenji, *A Study on Human Error in a Blowout Accident in Well Operation,* SICE Annual Conference 2008, August 20-22, 2008, The University of Electro-Communications, Japan, p.2759

[5] Id.

organisational and human.[6] In response to human factors identified as responsible for offshore accidents, rules and regulations are being put in place, in some jurisdictions, to eradicate the culture of complacency. There are also rules and regulations aimed at ensuring that regulators, operators and owners of installations, employees and personnel would all be responsible for the safety of offshore operations.[7]

Similarly, reports on some major hazards listed in table 1 above placed significant amount of blame on the regulatory regime at the time of the incident. Thus warranting change in legislation. For instance, Norway moved from prescriptive to performance based system in response to major hazards like the 1977 Bravo blowout and the loss of the Alexander L. Kielland in 1980.[8] The commission of inquiry report published in 1981 criticised the prescriptive system that was in place. With the coming into effect of the Petroleum Activities Act in 1985 the regulatory system was changed to performance based.[9] Responsibility for safety was placed on the operator while the regulator does 'supervision' and grants 'consents' as opposed to 'inspections' and 'approvals'.[10]

Following the Piper Alpha incident of 1988 in the UK Continental Shelf of the North Sea, the Lord Cullen Report offered 106 recommendations that were all adopted and implemented. In implementing the recommendations of the Lord Cullen Report, the UK transited from

[6] DNV, *Key Aspects of an Effective U.S. Offshore Safety Regime*, p.4, available on line at http://www.dnv.com/binaries/1008-001%20Offshore%20Update_Key%20aspects_tcm4-430982.pdf accessed on 29 August 2013

[7] In the US a new safety and environmental management system rule (SEMS II rule) empowers employees to stop work if they sense risky or dangerous activity without fear of sanctions by their employer and also have direct channel of communication with the Bureau of Safety and Environmental Enforcement (BSEE) to report violations. See Bureau of Safety and Environmental Enforcement, *Safety and Environmental Management System rule (SEMS) Fact Sheet*, available at http://www.bsee.gov/Regulations-and-Guidance/Safety-and-Environmental-Management-Systems---SEMS/Fact-Sheet.aspx accessed on 28 June 2013; See also the European Union Directive 2013/30/EU on safety of offshore oil and gas operations of 28 June 2013

[8] Petroleum Safety Authority Norway (PSA), "From prescription to performance in petroleum supervision" p.3, (hereafter PSA, From Prescription to Performance) available at http://www.psa.no/news/from-prescription-to-performance-in-petroleum-supervision-article6696-878.html last visited 03 November 2014

[9] Deepwater Horizon Commission Report to the President, p.69

[10] See PSA, From Prescription to Performance, supra note 8

prescriptive form of regulations primarily under the Mineral Working (Offshore Installations) Act 1971 to the safety case system of goal setting regulations.[11] Lord Cullen observed that the then existing regulations did not adequately consider the need to promote effective management of health and safety. He concluded:

> "Many existing regulations are unduly restrictive in that they are of the type which impose 'solutions' rather than 'objectives' and are out of date in relation to technological advances. This poses a clear danger that compliance takes precedence over wider safety considerations; and that sound innovations are discouraged."[12]

Also, the Montara Commission of Inquiry identified regulatory lapses as a contributory factor for the Montara blowout of 2009.[13] On that basis the National Offshore Petroleum Safety Authority (NOPSA) that was established in 2005 was transformed into the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) on 1 January 2012.[14] This was to ensure that a single regulator was in charge of offshore safety & environment and well management. The Montara Commission of Inquiry made it clear that it "does not support a return to a prescriptive approach" as it can unjustifiably smother innovation and new technologies.[15]

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[11] Rob Grant, Q.C., Will Moreira, Q.C. and David Henley, 'Potential for Performance-based Regulation in the Canadian Offshore Oil and Gas Industry', 44 Alta. L. Rev. 1, 4 2006-2007; See also Deepwater Horizon Commission Report to the President, pp.68-69

[12] U.K., Department of Energy, *The Public Inquiry into the Piper Alpha Disaster* (Chair: Lord Cullen) (London: Her Majesty's Stationery Office) para. 24 (1990) [Cullen Report] cited in Rob Grant, Q.C., et al, supra not 11, p. 4

[13] Report of the Montara Commission of Inquiry, p. 16-17 10 June 2010 [Hereafter Montara Report]

[14] Jane Cutler, NOPSEMA, 'Safety in the Australian Offshore Oil and Gas Industry Post-Piper – A Regulator Reflection' CEO Presentation at the Piper 25 Conference, Aberdeen, Scotland, p.3 20 June 2013 available at https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&cad=rja&uact=8&ved=0CD8QFjAE&url=http%3A%2F%2Fwww.oilandgasuk.co.uk%2Ftemplates%2Fasset-relay.cfm%3FfrmAssetFileID%3D3305&ei=qxJQVI_7EcGQPMLogdgO&usg=AFQjCNGLyj4dBWvZE--ycLTo4kDivddrOA&bvm=bv.78597519,d.ZWU last visited 29 October 2014

[15] Montara Report, p.17

Similar sentiments were expressed against the extant regulatory system following the Macondo blowout in 2010. As part of measures to improve safety of offshore operations, the Deepwater Horizon Commission in its report advised as follows:

> "Government agencies that regulate offshore activity should reorient their regulatory approaches to integrate more sophisticated risk assessment and risk management practices into their oversight of energy developers operating offshore. They should shift their focus from prescriptive regulations covering only the operator to a foundation of augmented prescriptive regulations, including those relating to well design and integrity, supplemented by a proactive, risk-based performance approach that is specific to individual facilities, operations, and environments. This would be similar to the "safety case" approach that is used in the North Sea, which requires the operator and drilling rig owners to assess the risks associated with a specific operation, develop a coordinated plan to manage those risks, integrate all involved contractors in a safety management system, and take responsibility for developing and managing the risk management process."[16]

In the aftermath of the Macondo blowout the US immediately made administrative changes to the regulation of offshore operation to improve institutional capacity and oversight. The EU also adopted Directive 2013/30/EU on Safety of Offshore oil and gas operations and amending Directive 2004/35/EC Directive 2013/30/EU on safety of offshore operations.[17]

Furthermore, the issue of international rules on responsibility and liability for damage arising from offshore oil and gas E&P remains undefined. For instance, the transboundary impact of

[16] Deepwater Horizon Commission Report to the President pp. 251-252
[17] Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on Safety of Offshore oil and gas operations and amending Directive 2004/35/EC

the Montara spill on Indonesian waters is still unresolved despite attempts by the Indonesian government to get the operators to compensate Indonesian victims of the spill.

The international community has always responded to major disasters with treaties and agreements to improve on safety and existing standards to forestall a repeat occurrence. Such response is evident in the area of protection of the marine environment, especially from maritime activities. Most offshore incidents have raised concerns about the safety of offshore operation and how best to prevent such accidents, emergency preparedness and response, and liability and compensation. The situation has also raised questions as follows: How best can the international community respond to issues of accidental pollution? Should international regulations be global or would regional agreements alone suffice? Various factors would influence the choice of regulatory option but any options that takes into consideration the protection of the marine environment and its biodiversity as a 'common concern' and achieve sustainable development[18] of offshore petroleum operations would do. The 1992 Biodiversity Convention affirms that "conservation of biological diversity is a common concern of humankind".[19] It is also reflected in the 1992 United Nations Framework Convention on Climate Change (UNFCCC),[20] which acknowledges that 'change in the earth's climate and its adverse effects are a common concern of humankind'.[21] The term 'common concern' is relatively recent, considering that under the 1979 Bonn Convention conservation of wild animals is "for the good of mankind"[22] while resources of the sea bed, ocean floor and subsoil

[18] According to the World Commission on Environment and Development, sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" – WCED, *Our Common Future* (Oxford, 1987) 43
[19] Preamble of the Convention on Biological Diversity, 31 ILM 818 (1992)
[20] 1771 UNTS 107, adopted on 9 May 1992 and inforce on 24 March 1994
[21] UNFCCC, para. 1 of preamble; See also UNGA Res. 43/53 (1988), 44/207 (1989) and 45/212 (1990) which acknowledged that climate change is a 'common concern of humankind' and rejecting Malta's original proposed draft which described global climate as the 'common heritage of mankind'
[22] 1979 Convention on the Conservation of Migratory Species of Wild Animals 19 I.L.M. 15 (1980), preamble

are "the common heritage of mankind".[23] With increase in E&P activities in deep and ultra-deep water around the globe and possibility of accidental pollution with transboundary consequences there is a real threat to marine biological diversity. Hence, the need for a strong international approach to the regulation of these activities and make them sustainable. Transboundary pollutions with global consequences are of 'common concern' to all States and call for the active participation and cooperation of all States.[24]

1.1 Safety and Prevention of Accidents

Accidents are mostly a product of poor safety observance. Regulations, guidelines and standards established by government and professional institutions are primarily focused on ensuring best practice and promoting safety of the operations of an industry. The essence of safety practices is to prevent accident and avoid damage to individuals, property and the environment. Hence, companies take seriously issues of safety in their operations. Safety breach which could be termed human error is responsible for some major accidents in the offshore industry.[25] Where safety rules are breached, the operator would be held liable for any consequences and may be sanctioned by regulatory bodies.

The liability that arises from a breach of safety rules or regulation is primarily based on the simple act of breach of statutory provisions, guidelines or industry best practices irrespective

[23] UNGA Res. 2749 (XXV) of December 1970, 1982 United Nations Convention on the Law of the Sea (UNCLOS) and now the Agreement Relating to the Implementation of Part XI of UNCLOS. See generally Philippe Sands, *The Principles of International Environmental Law* (2nd edn, Cambridge) 286-287 (2003)
[24] Philippe Cullet, *Differential Treatment in International Environmental Law*, (Ashgate Publishing, 2003) p. 5. Development in treaties and other instruments after the 1992 United Nations Conference on Environment and Development seems to reflect an acceptance of the fact that the protection of the environment and achieving sustainable development are "common concerns of humankind". The IUCN in article 3 of its Draft Covenant on Environment and Development states that the "global environment is a common concern of humanity." See David Hunter, James Salzman and Durwood Zaelke, *International Environmental Law and Policy*, (2nd edn, Foundation Press, 2002) p. 397-398
[25] Examples are the 1988 Piper Alpha disaster, 2009 Montara blowout.

of the level of damage caused by the breach. In which case same sanction for breach of safety regulations may be applied irrespective of the magnitude of pollution or environmental damage caused. However, there are instances where the breach of safety regulations may have implication on the amount of fine imposed for a particular breach. An example is the provision of fines under the US Clean Water Act[26] where the fine would be increased for every barrel of crude spilled if the operator is found liable for gross negligence. Safety is enforced by the State which may impose criminal fine, suspend licenses and in some extreme cases withdraw licenses for its breach.

There are acts that may have damaging effect on the environment but are acceptable as part of safety measures in offshore oil and gas operations. For instance, gas flaring which is a source of air pollution is accepted as important safety measure in offshore oil and gas production.[27] Acts undertaken as safety measures in operations may not be viewed as act of misconduct but operational pollution.

Regulations aimed at preventing accidental pollution are predominately safety measures aimed at ensuring there are no major hazards. In the aftermath of the Deepwater Horizon, the EU adopted Directive 2013/30/EU on offshore Safety to prevent major hazards in offshore operations and minimize the consequences in the event of any occurrence. A breach of safety rules may lead to major hazards requiring emergency response and raise issues of liability and compensation. Hence, safety concerns are key in the regulation of accidental pollution from offshore petroleum E&P.

[26] 33 U.S.C. § 1251 et seq. (1972), it allows penalties up to $1,100 per barrel, and up to $4,300 per barrel in the case of gross negligence or wilful misconduct.
[27] See World Bank Group, Environment, Health, and Safety Guidelines for Offshore Oil and Gas Development, April 2007, para 1.1, p.3

1.2 Accidental Pollution

There is no one size fits all definition of pollution. Treaties on various subjects define or give an indication of what amounts to pollution in the context of that environment, activity or trade. In relation to marine environment, different instruments provide various definitions of pollution. At the global level the United Nations Convention on the Law of the Sea (UNCLOS)[28] defines pollution of marine environment as:

> "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities."[29]

The basic element of expressed definition lies on the view point that substances that produce deleterious effects are introduced directly or indirectly into the marine environment. But the implication relates to its biodiversity and legitimate uses. Oil is a substance that can cause devastation to the environment and an accidental release of it would result in harmful effects, destroy marine biodiversity and distort its legitimate uses.

The above definition is a reflection of Principle 7 of the 1972 United Nations Declaration on the Human Environment (Stockholm Declaration) [30] that calls on States to "take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."

[28] 21 ILM 1261 (1982)
[29] UNCLOS, Art.1(4)
[30] 11 ILM 1416 (1972), UN Doc. A/CONF.48/14/Rev.1 59 (Stockholm Declaration) Principle 7

Regional treaties contain similar definitions of pollution. For instance the 1976 Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention) [31] defines pollution as:

> "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results, or is likely to result, in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of seawater and reduction of amenities."[32]

The 1994 Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and Subsoil[33] (Offshore Protocol) provides no separate definition independent of that provided by the Convention. Similar definition is provided by the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area (1992 Helsinki Convention).[34] Under the 1992 Convention for the Protection of the Marine Environment of the North-east Atlantic (OSPAR Convention),[35] pollution "means the introduction by man, directly or indirectly, of substances or energy into the maritime area which results, or is likely to result, in hazards to human health, harm to living resources and marine ecosystems, damage to amenities or interference with other

[31] 1102 UNTS 27 (1976) entered into force on February 12, 1978 and was revised in 1995. When the revised one came into force 9 July 2004 it became referred to as Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean
[32] Barcelona Convention, Art.2(a)
[33] Adopted on October 14, 1994 and entered into force on March 24, 2011 (commonly referred to as the Offshore Protocol)
[34] 9 April 1992, came into force 17 January 2000 with ten state parties. Art. 2(1) defines it as "introduction by man, directly or indirectly, of substances or energy into the sea, including estuaries, which are liable to create hazards to human health, to harm living resources and marine ecosystems, to cause hindrance to legitimate uses of the sea including fishing, to impair the quality for use of sea water, and to lead to a reduction of amenities."
[35] 2354 UNTS 67 (1993) (entered into force on March 25, 1998)

legitimate uses of the sea."[36] Interestingly, the key elements of the definitions at global and regional levels are similar.

The EU Directive on safety of offshore operations does not provide a definition of pollution. Conversely, it defines 'major environmental incident' which means 'an incident which results, or is likely to result, in significant adverse effects on the environment in accordance with Directive 2004/35/EC.[37] "Significant adverse effects" is termed 'environmental damage' and defined in Directive 2004/35/EC as, inter alia, "damage to protected species and natural habitats, which is any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species." In relation to water it means any damage that adversely affects the ecological, chemical and/or quantitative status and/or ecological potential of the waters concerned significantly.[38] Accordingly 'damage' means "a measurable adverse change in a natural resource or measurable impairment of a natural resource service which may occur directly or indirectly".[39]

Accidental pollution in offshore oil and gas operations are mainly a product of major accidents. These represent incidents involving explosion, fire and loss of well control leading to blowouts, or release of oil, gas or dangerous substances with significant damage to environment, serious personal injury and sometimes fatalities.[40]

In the context of this research, accidental pollution is the unintentional release of oil and gas substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to

[36] 1992 OSPAR Convention, Art. 1(d)
[37] EU Directive 2013/30/EU, Art.2(37)
[38] EU Directive 2004/35/EC, Art. 2(1) (a)&b)
[39] EU Directive 2004/35/EC, Art. 2(2)
[40] See definition of "major accident" in EU Directive 2013/30/EU, Art.2(1)

human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities. Consequently, emergency release of oil and gas or other dangerous substances as part of safety measures in offshore operation would not be considered as accidental pollution.

1.3 Coastal State Jurisdiction over Offshore Resources

States have right of permanent sovereignty over natural resources within their territories[41] and the freedom to exploit them is well established.[42] The 1958 Geneva Convention on the Continental Shelf[43] gave right to coastal States to construct, maintain and operate installations and other devices necessary for exploration and exploitation of the natural resources of the continental shelf. A 500 metre safety zone is to be established around every installation with appropriate measures taken to protect living resources of the sea from harmful agents from the installation. However, the right over living and non-living resources, especially in the exercise of right to exploit natural resources of the seabed, and the corresponding obligation to protect and preserve the marine environment must be exercised within the ambit of international law.

These natural resources include mineral and other non-living resources of the sea-bed and subsoil.[44] The rights over the seabed in the exclusive economic zone are defined in relation to the regime governing the continental shelf. But the economic importance of the continental shelf is underscored by the fact that irrespective of the absence of an exclusive economic zone,

[41] Id., UNGA Res. 1803 (XVIII), Permanent Sovereignty over Natural Resources
[42] See UNGA Res. 626 (VII), Right to Exploit Freely Natural Wealth and Resources, text contained in Rauschning, Wiesbrock and Lailach (eds.) *Key Resolutions of the United Nations General Assembly, 1946-1996* (Cambridge University Press, Cambridge) p. 318 (1997)
[43] 1958 Continental Shelf Convention, 499 UNTS 311, in force 10 June 1964
[44] United Nations Convention on the Law of the Sea (UNCLOS) 21 ILM 1261 (1982), Art.77

there can still be a continental shelf. On the contrary, there cannot be an exclusive economic zone without a corresponding continental shelf.[45]

Presently, issues of sovereignty and jurisdiction over various areas of the sea are governed by the UNCLOS. Under UNCLOS a coastal State has competence to legislate in relation to, inter alia, the safety of navigation, the protection of navigational aids, cables and pipelines, the conservation of living resources, the preservation of the environment and the prevention, reduction and control of pollution, as well as fiscal and immigration matters[46] in the territorial sea.[47] Within a zone contiguous to the territorial sea, which may extend no further than 24 miles from the baseline, coastal States may exercise control in relation to customs, fiscal, immigration or sanitary laws.[48] In the exclusive economic zone (EEZ) that is not more than 200 miles from the baseline[49] a coastal State has sovereign rights over both living and non-living natural resources. It has jurisdiction over the construction of artificial islands and installations, marine scientific research and the protection and preservation of the marine environment.[50]

In relation to protection and preservation of the marine environment, a coastal State has both legislative and enforcement jurisdiction in respect of dumping,[51] vessel pollution[52] and pollution from sea-bed activities.[53]

Sovereignty or sovereign rights are arguably not absolute. Countries must act within the limits of its international law obligations and by their sovereign status they have a corresponding duty

[45] Continental Shelf Case (Libyan Arab Jamahiriya v. Malta), 1985 ICJ Reports 4, 33, para. 34, see also Centre For Ocean Law and Policy, *United Nations Convention on the Law of the Sea 1982: A Commentary*, Vol. II, Nordquist (ed.) (Martinus Nijhoff Publishers) p.825-827 (1993)
[46] UNCLOS, Art 21(1)
[47] The territorial sea is 12 nautical miles from the baseline, see Art. 3 of UNCLOS
[48] Id, Art 33
[49] Id, Art. 57
[50] Id, Art. 56
[51] Id, Art. 210 (5)
[52] Id, Arts. 211(5) &(6), 220 and 234
[53] Id, Art, 208, 214

to respect the interest of other sovereign States.[54] The sovereignty over living and non-living resources in a country's territorial waters, EEZ and continental shelf expressed in the principle of permanent sovereignty of nations over their natural resources and wealth is also not absolute. It is subject to the State's obligation not to cause environmental harm to the environment of others States or areas beyond national jurisdiction.[55]

Offshore petroleum E&P is undertaken in a good number of countries and regions of the world. The Arctic environment that could face severe consequences in the event of any major hazard and pollution has also witnessed gradual increase in exploration activities.[56] However, the adequacy of international regulation of these offshore activities to guarantee protection of marine environment within State jurisdiction and areas beyond national jurisdiction is not certain. The magnitude of the Macondo spill has challenged the efficacy of existing legal regimes in ensuring adequate safety in offshore petroleum operations and effective emergency response in the event of a major hazard. The question is, how protected is the ecosystem and biodiversity of the marine environment as more States in exercise of their right to resources in the continental shelf authorise more deep and ultra-deep water petroleum E&P? Also, in the event of a major hazard resulting in transboundary pollution, what are the remedies in international law for affected individuals and States as no State has yet successfully made claim for transboundary pollution from offshore petroleum operations?

[54] See *Corfu Channel Case*, Merit Judgement, (1949) ICJ Reports 4, 39, 43 where Judge Alvarez observed that "We can no longer regards sovereignty as absolute and individual right of every state, as used to be the case under the old law founded on the individual regime, according to which states were only bound by the rules which they had accepted. Today owing to social interdependence and to the predominance of general interest, states are bound by many rules which have not been ordered by their will."

[55] The locus classic case is the *Trail Smelter Arbitration* 3 RIAA 1907 (1941) which declared that "Under the principles of international law… no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties of another therein, when the case is of serious consequence and the injury is established by clear and convincing evidence." This judicial pronouncement was amplified subsequently in Principle 21 of Stockholm Declaration and Principle 2 of 1992 Rio Declaration on Environment and Development (Rio Declaration), 31 ILM 874 (1992)

[56] See Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska, *Managing for the Future of a Rapidly Changing Arctic: A Report to the President (2013)* on Arctic oil and gas developments in Alaska and the challenges

1.4 The Research Question

From the foregoing the two part question for consideration in this research is:

Whether the extant international legal regime adequately provides for prevention of accidental pollution, response to emergencies and liability and compensation arising from offshore petroleum exploration and exploitation activities? If not, what form of international legal framework might be deployed to remedy this gap in the legal regime on offshore petroleum exploration and production?

The conjecture is that on the basis of a review of existing international law, it does not adequately address issues of accidental pollution from offshore petroleum exploration and exploitation. Therefore, there is need to put in place an international framework that will substantially and effectively address issues relating to or connected with accidental pollution from offshore petroleum operations.

1.5 Aims of the Research

The research is focused on achieving two things. First, through a comprehensive analysis of the international legal regime governing offshore petroleum E&P in the global context and in major regions like the North-East Atlantic, Mediterranean Sea and Baltic Sea identify gaps in provisions for prevention of accidental pollution, emergency response and liability and compensation. With the global increase in offshore petroleum E&P and the realities of an ever present possibility of disaster associated with offshore operations a comprehensive study of the

international legal regime to identify shortcomings is important. Especially, when the regulatory framework has been a contributory factor to the occurrence of offshore accidents.[57]

Based on identified gaps in international law, the second aim is to proffer options for effective international legal framework for prevention of accidental pollution from offshore petroleum E&P, emergency response and liability and compensation. The international legal framework should take into consideration developing and small resource rich countries and regions which lack political will and institutional capacity to enact firm regulations and enforce them against rich and influential international oil companies (IOCs). They should also be guided by the need to protect marine biodiversity as a common concern of all States.

1.6 Significance and Justification of the Research

This investigation has become relevant and timely as the echoes of the Macondo blowout signal a new round of regulatory and contractual changes in a bid to improve safety of offshore petroleum operations to prevent similar occurrence; minimise consequences of major hazards through improved emergency preparedness and response; and provide a workable liability and compensation regime. In the circumstance, action should be focused on having a robust international legal framework.

1.6.1 Safety and Prevention of Accidental Pollution

Preventing accidents in industrial activities involves a great deal of deliberate and consistent actions to ensure safe operations. Some of these actions are environmental monitoring,

[57] See the Deepwater Horizon report, Chapter Three pp.67, 72-78, 84-85 and Chapter Four pp.126-127; the Montara Commission report, pp 113-114, 126 (para 3.255), 128 (para.3.262), 121-123, 138-147 and most especially, pp.148-149

environmental auditing, environmental performance evaluation (Industry based initiatives), major hazard reporting[58] and the requirement to carry out environmental impact assessment that are relevant for the prevention of pollution[59]. Other environmental standards are – Environmental Management Plan and Environmental Information reporting and the minimum parameters for doing these are essential.

International regulations similar to what is obtainable in other industries like maritime are necessary in providing global minimum standards[60] for the offshore petroleum industry. Such international standards could be set through regional or global instruments. While a global instrument might have a wider coverage for sustainable protection of the marine environment there is the concern that concrete commitment to safety might be lost in an attempt to accommodate numerous interests in the establishment of a global minimum. On the contrary, regional treaties are easier to negotiate as there are fewer parties and the circumstances of countries in the region are alike. In that case having higher standards as a minimum is achievable. While this may be true of regions with predominantly developed countries same may not be the case in developing regions. Some regions may end up without a negotiated agreement or treaty on the subject. Therefore, an act of balancing is needed to determine the best option for international regulation of offshore petroleum E&P to achieve the desired robustness.

Issues of safety and prevention of accidental pollution from offshore oil and gas operations have become key following recent series of disasters. Some States have made changes to the

[58] The major hazard reporting requirement is being introduced by the European Commission following the Deepwater Horizon disaster of April 2010.
[59] *Pulp Mill on the River Uruguay (Argentina v. Uruguay) case*, ICJ Report (2010), para. 204
[60] A global minimum should be that standard of operation below which would be unacceptable for offshore oil and gas operations worldwide. Such global minimum standards could be set through the application of defined 'best available technique', 'best environmental practice' and by reference to acceptable international best practice, guidelines and recommendations of respected professional institutes such as the American Petroleum Institute (API), British Standard Institute (BSI) and International Organisation for Standardisation (ISO)

conditions for authorisation of offshore operations and regulations on health, safety and environment.[61] For instance, in response to the findings contained in the Montara Commission report, Australia enacted the Offshore Petroleum and Green House Gas Storage Amendment (Compliance Measures) Act No. 11 of 2013 (Compliance Measures Act No.1).[62] The Act aims to strengthen the offshore petroleum regulatory regime with respect to compliance, safety, integrity and environmental management objectives. In particular the Act enables NOPSEMA inspectors to access offshore facilities without prior notification for inspections relating to compliance, operational and environmental standards (Schedule 1 part 2, Clause 4).[63] The European Commission emphasised the need for international cooperation and adopted the Directive on safety of offshore operations. It also concluded Union approval of accession to the 1994 Offshore Protocol to the Barcelona Convention on behalf of members of the Union within the Mediterranean region.[64]

Based on the 2009 Montara and 2010 Macondo incidents the present study looks at the international regulatory framework, assesses their adequacy and recommends options for improved regulation of offshore operations globally for sustainable protection of the marine environment and related interests. A fair level of parity in standards of operation that guarantees adequate safety globally is desired. The challenge is whether it is achievable and how to strike

[61] Some of these are the US Offshore drilling safety rules 2012 that will reduce the risk of blowouts but estimated to cost the industry additional US$130.7 million annually (rules released on 15 August 2012), the EU Directive 2013/30/EU on safety of offshore operations, UK Offshore Petroleum Activities (Oil Pollution Prevention and Control) (Amendment) Regulations 2011, Regulations relating to Health, safety and the Environment in the Petroleum Activities and at Certain Onshore Facilities (The Framework Regulation) 2011 and the Nigerian Petroleum Industry Bill 2012

[62] Was passed on 28 February 2013 and assented to on 14 March 2013, Act available at http://www.comlaw.gov.au/Details/C2013A00011

[63] NOPSEMA, *Recent Changes to Legislation* available at http://www.nopsema.gov.au/legislation-and-regulations/recent-changes-to-legislation/

[64] Brussels, 27.10.2011, COM(2011) 690 final, 2011/0304 (NLE), "Proposal for a COUNCIL DECISION on the accession of the European Union to the Protocol for the Protection of the Mediterranean Sea against pollution resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil" available on line at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0690:FIN:EN:PDF accessed 16 August 2012.

the balance in a world where nations are more protective of their economic interest than global environmental protection.

1.6.2 Emergency Response

Following the Exxon Valdez disaster of 1989, the 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC)[65] was adopted. The Convention has ample provisions to encourage international response to marine pollution. But to some extent the needed response is subject to the judgement of individual nations.[66] Considering the fact that not every country and region has the necessary personnel and requisite equipment to contribute and respond to emergencies this may lead to inconsistencies in response quality. For example, while the US, Norway and UK are focused on improving safety and emergency response in their offshore industries, developing countries, like Nigeria in the gulf of Guinea, seem to focus on ways to attract investors in the oil and gas sector.[67] There are some regional agreements on emergency response such as the Bonn Agreement[68] under the OSPAR regime which is applicable whenever there is grave and imminent danger of pollution of a transboundary nature.[69] There is an expected level of coordination and cooperation in case of possible transboundary pollution.[70]

However, given the magnitude of the Macondo spill and the challenges that confronted rescue efforts, the provisions on emergency response under the OPRC might need review to adapt

[65] 30 ILM 733
[66] Id, Arts 6(2) and 7 as an example uses the phrases "within its capability" and "subject to their capability and the availability of relevant resources." See also Art 9(2)
[67] In a bid to encourage offshore E&P Nigeria granted IOCs 10 year free royalty period for deep water operations. Nigeria's current focus in the oil and gas industry is the passage of a new petroleum industry bill into law and hoping that the law will boost foreign investment in the oil and gas sector of the economy and environmental protection is not prioritised.
[68] Available at http://www.bonnagreement.org/eng/html/welcome.html accessed on 25 May 2012
[69] Bonn Agreement, Art. 1
[70] Ibid, Art. 32

better to major hazard in offshore oil and gas E&P. This research provides the needed analysis of existing emergency response provisions to determine their relevance and efficacy in a post-Macondo era and provides options for improvement. The outcome will enhance determination of improvements that might be needed in future agreements in this regard.

1.6.3 Liability and Compensation

Liability could be absolute, strict or fault based. Regimes dealing with dangerous activities and substances impose strict and or absolute liability on parties responsible for accidental pollution.[71] However, in relation to accidental pollution from offshore petroleum operation, there is no global instrument clearly providing for the type and channelling of liability. More so, liability cap and equal access to justice that guarantees prompt payment of compensation. These issues also vary from region to region and from country to country. The 1977 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources (CLEE)[72] which establishes a legal framework on liability failed to receive the required assent to come into force. Boyle argues that the fear of possible radical changes to national tort law is a reason for the reluctance.[73] In the apparent void, there is the Offshore Pollution Liability Agreement (OPOL),[74] an industry initiative that provides for key elements of a good liability regime- strict liability, compulsory insurance, liability cap and easy claim process. But how far OPOL can go as a private initiative remains an open question.

[71] Nuclear substances and space activities are unanimously seen as dangerous activities but oil and gas activities seem not to have gained universal acceptability as very dangerous activity.
[72] 16 ILM 1451 (1977) Not in force
[73] Boyle, A. E., *Globalising Environmental Liability: The Interplay of national and International Law*, Vol.17 (1) J. Env. L. 3 (2005)
[74] It currently has the 2010 version that is available at http://www.opol.org.uk/downloads/opol-agreement-oct10.pdf accessed 26 may 2012.

While it is trite that transboundary harm is prohibited under international law, the extent to which a State may be held responsible and the nature and level of the operator's liability when the harm is transboundary is not settled.[75] Article 235 of UNCLOS creates a distinction between a State's liability for failure to fulfil its obligation to protect the marine environment and liability attached to natural or juridical person for marine pollution. In practice, States are hardly held liable for transboundary environmental damage resulting from activities in their territories and there is almost no state practice. An exercise of due diligence by taking all necessary and appropriate steps to secure effective compliance with the provisions of the Convention seems to be all that is needed.[76] However, States owe a duty to the international community to provide recourse for victims to be adequately compensated by the individuals or entities responsible for the damage.[77]

The absence or lack of uniform liability requirements create uncertainty for both operators and victims of accidental pollution. For instance, while BP was confronted with the possibility of being fined about US$20 billion for spilling about 5 million barrels of oil in the Macondo incident, Chevron was initially faced with a threat of US$10 billion fine for spilling about 3000 barrels in Brazil.[78] For victims, especially in a transboundary context, it is a tortuous venture to claim against the country of origin or the private operator. Furthermore, despite Indonesia's desire to get compensation for her citizens affected by the 2009 Montara spill it has not been able to file any formal claim against PTTEP Australasia, the operator responsible for the

[75] Brunnee, J., Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection, ICLQ 351 p.353 (2004)
[76] UNCLOS, Art.139. See Birnie, P., Boyle, A. and Redgwell, C., *International Law and the Environment*, 3rd ed. (Oxford University Press) p.430 (2009)
[77] UNCLOS, Art. 235(2)
[78] Chevron finally paid a US$17.3 million fine, available at http://www.huffingtonpost.com/2012/09/28/chevron-pays-fine-for-oil_n_1922950.html#slide=1255346 accessed on 30 October, 2012. BP under a plea bargain settled for a fine of US$4.5billion, see BP Announces Resolution of All Criminal and Securities Claims by U.S. Government Against Company Relating to Deepwater Horizon Accident, available at http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7080497 accessed on 21 November 2012

incident. Complaints filed by Indonesia in 2010 were disputed[79] and PTTEP alleged that the facts were inconsistent.[80] Though Indonesia in 2014 formally requested the cooperation of Australia in resolving the dispute over liability for damage to Indonesian waters, Australia appears not keen on giving the necessary cooperation.[81]

Some countries like Nigeria lack adequate domestic legal regime to hold offshore operators accountable for accidental pollution. This paves way for arbitrary imposition of fines and award of damages by both the regulators and the legislature which, more often than not, are challenged by the IOCs.[82] While BP has spent billions of US dollars in settling claims arising from the Macondo spill in the Gulf of Mexico, Shell in Nigeria has not paid any sum to individuals and communities affected by the 2011 Bonga spill in the Gulf of Guinea.[83] Also, in the Ixtoc I blowout though there was damage to United States environment Mexico refused to accept responsibility and complaints were eventually resolved in civil claims.[84] Thus the issue of legal standing to bring a claim and the proper defendant to sue is fundamental in the case of transboundary harm.

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[79] *Indonesia Plans to Litigate the Montara Oil Spill Incident to the International Court of Justice*, English Hukum 2 September 2010 available at http://en.hukumonline.com/pages/lt4c7e9fb17dbbe/indonesia-plans-to-litigate-the-montara-oil-spill-incident-to-the-international-court-of-justice, see also The Jakata Globe, *Indonesia Demands $2.4 billion Payout over Montara Oil Spill* available at http://www.thejakartaglobe.com/archive/indonesia-demands-24-billion-payout-over-montara-oil-spill/

[80] PTTEP Australasia, *PTTEP AA remains committed to reaching a mutually agreed resolution with the Government of Indonesia*, Fact Sheet, available at http://www.au.pttep.com/media/20778/government%20of%20indonesia%20compensation%20claim.pdf

[81] George Roberts, 'Montara oil spill: Indonesia requests Australia's cooperation on resolving dispute over impact on coastal communities', ABC News, 30 September 2014, available on line at http://www.abc.net.au/news/2014-09-29/indonesia-pleads-for-australias-cooperation-on-montara-oil-spill/5777840 last visited 03 February 2015; Australian Lawyers Alliance, 'Five years on- and still no justice on Montara oil spill' available at http://www.lawyersalliance.com.au/news/five-years-on-still-no-justice-on-montara-oil-spill last visited 03 February 2015

[82] For instance the Nigerian House of Representative directed Shell to pay US$3.6 billion for Bonga spill, see Asoko Insight, 28 November 2014, available at http://asokoinsight.com/news/2011-bonga-oil-spill-reps-ask-shell-pay-3-6-billion-compensation-penalty-nigeria/ last visited 13 September 2015

[83] Nigerian Tribune, FG Battles Shell over non-payment of Bonga spill fine, 19 August 2015, available at http://tribuneonlineng.com/fg-battles-shell-over-non-payment-bonga-spill-fine last visited 13 September 2015

[84] Birnie, Boyle and Redgwell, supra note 76, p.431. See also Smith, Brian D., *State Responsibility and the Marine Environment* (Clarendon Press, Oxford) p.117 (1988)

Generally, the research examines the extent to which international law has responded to recent incidents like Montara blowout and Deepwater Horizon. It will ascertain if those changes actually address the needed regulatory challenges for offshore petroleum E&P as operations go further to deep and ultra-deep waters. The research takes a path that is seen by many contributors to be a closed or unnecessary route as they posit that offshore oil and gas activities are better regulated by regional agreements and national laws only. Those contributors lay less emphasis on the crucial role a global regulatory framework could play in improving safety and preventing accidental pollution from offshore petroleum installations in many developing regions of the world and delicate environments like the arctic.

Developed regions and States may effectively regulate offshore petroleum operations to ensure safety in the absence of global regulations. Same may not be applicable in developing States and regions such as Nigeria and the Gulf of Guinea that lack political will, institutional capacity and legal framework needed to ensure the safety of offshore operations, protect the environment and guarantee justice for affected individuals.

1.7 Analytical Framework

A cardinal reason for regulating activities that have negative impact on the environment is to make it safe and prevent environmental disasters. The focus of legal regimes for offshore oil and gas E&P is to promote safety and prevent accidents/major hazards. Therefore, the analytical framework is built around the principle of prevention. Prevention in global context entails cooperation, environmental monitoring, environmental auditing and environmental performance evaluation (Industry based initiatives) and major hazard reporting. Also, the requirement to carry out environmental impact assessment, environmental information reporting and environmental management plan are relevant to prevention of pollution.

While regulation of business activities is imperative to safeguard public health, safety and environment, there is the fear of having unreasonable regulation and its attendant harmful effect. Bardach and Kagan theorised during the pro-regulation movement era of 1970-80s that increased amount of protective regulation can bring about unexpected consequences that work against the regulatory goal.[85] But they posit that some level of regulation is necessary as "neither market pressure, the desire for good public image, nor the 'voice' of safety and environmental engineers is entirely sufficient to produce regulatory compliance."[86] Moreover, Bardach and Kagan acknowledged that though some companies might self-regulate effectively but, typically, regulatory schemes cover a range of companies having widely disparate resources that affect their ability to self-regulate.[87]

Also, companies' attitudes are different in relation to regulatory compliance.[88] Accordingly "good apples" are inclined to comply with regulations because they have a long-term interest in maintaining a positive corporate image, preventing lawsuits, and avoiding the stigma of being labelled a company that flouts safety or environmental standards.[89] On the contrary, "bad apples" are guided by short-term interests and resist regulation because of the cost or inconvenience of compliance.[90] Bardach and Kagan conclude that while good apples may act just the same without regulatory oversight, some level of oversight is necessary to set a minimum standard for bad apples' behaviour.[91]

Though, Bardach and Kagan's hypothesis is based on domestic regulations and the implication on national companies, it could be applied to the context of international regulation of offshore

[85] Eugene Bardach and Robert A. Kagan, *Going by the Book: The Problem of Regulatory Unreasonableness* (Temple University Press, 1982) IX
[86] Ibid, p.62
[87] Ibid, p.62
[88] Ibid, p.64
[89] Ibid
[90] Ibid, p.65
[91] Ibid

petroleum activities. There are countries that will always put in place considerable level of safety regulations to prevent accidents from offshore petroleum installation in the absence of global and or regional binding instruments. On the other hand, there are some nations whose legal systems, regulatory institutions and enforcement mechanisms are so weak that without global and regional binding instruments that set basic standards, operators may exploit such weaknesses for economic gains to the detriment of the marine environment and population. This may expose offshore operations to catastrophic incidents that are ordinarily avoidable.

Therefore, relevant global treaties and regional agreements together with regulatory response by EU in response to recent offshore incidents would be analysed with the parameters of the principle of prevention to ascertain their adequacy. Also, provisions on emergency preparedness and response and liability and compensation would be reviewed at global and regional levels. This is to determine the level and nature of international regulatory framework that will sufficiently and effectively address accidental pollution in offshore petroleum operations.[92]

At the global level, hard and soft law instruments were critically analysed. There are a few regional sea conventions, most of which were facilitated by UNEP. But the research focused on the Northeast Atlantic, Baltic Sea and Mediterranean Sea regions as examples of developed regional regimes on offshore petroleum operations as bench mark of regional regulations. The reason being that, first, offshore petroleum activities take place in the territories of many of the member States of these regions; second, these regional sea agreements all date back to the 1970s and have undergone amendments in response to growing environmental awareness; and third, most of the State parties to these regional agreements are developed countries and many are members of the European Union (EU) and subject to EU regulations and directives. The

[92] Hall, L., *Calling on experts: industry's perspective on the regulatory response to the BP blowout*, IELR. (2012) 95, 107

EU Directive 2013/30/EU on safety of offshore petroleum operations would be analysed alongside these regional agreements to give an indication of what recent legal regime in a post Macondo era offers in relation to prevention of accidents, emergency response and liability and compensation.

The EU Directive is very relevant in the analysis as it is the only detailed international instrument successfully negotiated and adopted in response to the Macondo blowout of 20 April 2010. Moreover, it is an instrument that covers more than a single sea region. The EU Directive on safety of offshore operations is applicable to all Member States of the Helsinki Convention except Russia. By implication, a great proportion of the Baltic Sea would be influenced by regulations that reflect the desired standard and goal of the EU Directive. Twelve of the fifteen OSPAR Convention member States are also members of the European Union.[93] Of the three non EU members, Norway that has serious offshore petroleum activities is known to have effective legal regime. In the Mediterranean Sea region, eight of the contracting parties to the Barcelona Convention are EU Member States[94] that are required to implement the EU Directive. But, parties to the Barcelona Convention who are not members of the European Union, are not bound by the EU directive.[95]

Private industry initiatives in addressing some of these issues will also be explored. A good example is OPOL in the North Sea.

In addition to the principle of prevention, elements of polluter pays and precautionary principles would be brought to bear on the analysis. This is because curtailment of environmental risk is the common denominator of the polluter pays, prevention and

[93] The three non EU members are Iceland, Norway and Switzerland
[94] The EU Member States are Croatia, Cyprus, France, Greece, Italy, Malta, Slovenia and Spain
[95] The non-EU members are Albania, Algeria, Bosnia and Herzegovina, Egypt, Israel, Lebanon, Libya, Monaco, Monaco, Morocco, Montenegro, Syria, Tunisia and Turkey.

precautionary principles and as such may be applied in the same regime.[96] Ordinarily, a regulatory regime could be made to be anticipatory, preventive and curative in its approach to protection of marine environment.

1.8 Methodology

The research seeks to identify gaps in the international legal framework in relation to accidental pollution from offshore petroleum operation and suggest how to achieve a robust international legal regime at all levels to fill such lacuna as regards prevention, emergency preparedness and response, and liability and compensation. To this end, the research would involve analysis of relevant global legal instruments and regional agreements, especially those that are binding and in force.

The account is analytical in its detailed and critical examination as well as appraisal of the major issues and trends. Vertically the research is focused on three issues; prevention of pollution from offshore installation, emergency response to accidents and liability and compensation for pollution damage. These vertical issues will be analysed at the global and regional levels using the preventive, polluter pays and precautionary principles as analytical tools.

The research methodology is based on the jurisprudential approach of deductive logical reasoning, combining qualitative and explanatory case-studies. Furthermore, there would be analysis by analogy to the shipping industry's regulation of oil tankers and other regimes governing dangerous activities such as nuclear energy. This is to aid the process of identifying regulatory regimes that could be guide to development of robust international legal framework

[96] De Sadeleer, Nicholas, *Environmental Principles: From Political Slogans to Legal Rules* (Oxford Press) p.369 (2005)

on safety and prevention of accidents in offshore petroleum E&P, emergency response and liability and compensation.

1.9 Structure of the Thesis

The research is an examination of the extant international legal regime with a view to determining the adequacy or efficacy in addressing issues related to and arising from accidental pollution. These are prevention, emergency response, and liability and compensation. The thesis is structured in seven chapters.

Chapter one is the general introduction that presents the background and problem of the research. It introduces the research question, the analytical framework and methodology employed in resolving the research question. Also, the chapter gives the aim, significance, justification and expected academic contribution of the research.

Chapter two is a synopsis of the existing international legal regime on offshore petroleum operations, thus providing an idea of the current state of international regulation on the subject. It also sets out the parameters of the analytical tools- prevention, precautionary and polluter pays principles and a mention on the legal status of offshore installations. Chapter three is an overview of the technical and environmental aspects of offshore petroleum operations, including the impact of operational discharges such as chemicals, drilling cuttings and associated pollutants on the marine ecosystem and biodiversity. It also provides concise description of offshore petroleum installations used in various depth of water, the devastating consequences of accidental pollution on marine biodiversity, persons and businesses dependent on marine environment.

Chapter four addresses in detail the fundamental issue of prevention of accidental pollution from offshore petroleum installations. In view of the obligation of States to prevent harm to the marine environment within jurisdiction and to areas beyond the limits of national jurisdiction relevant international treaties are examined to ascertain the extent of regulations in place for prevention of pollution from offshore petroleum activities and gaps identified. Identification of basic elements of prevention in the treaties is done to ascertain their adequacy in relation to offshore petroleum E&P.

Chapter five focuses on emergency preparedness and response in the event of accident in an offshore installation. The preventive element of cooperation, notification and expertise necessary for emergency response are analysed in global and regional instruments. The adequacy of the OPRC in response to spill in the magnitude of Macondo spill is examined, limitations are identified and possible areas of improvements are suggested.

Accidents have impact on environment, businesses and individuals which raise issues of liability and compensation. Therefore, chapter six takes a broad look at these issues in offshore petroleum E&P, especially when there is transboundary harm. The extent of State responsibility for accidental pollution resulting in transboundary damage is also examined. Key aspects of liability like nature of liability, cap on liability and insurance/guarantee and their adequacy in the prevailing circumstances of offshore operation is analysed in relation to the extant international legal regime. Furthermore, an appraisal of OPOL and its relevance as a private industry initiative in addressing liability arising from offshore petroleum operations is done.

Based on the findings from the analysis of issues in chapters four to six and the identified strengths and weaknesses of the extant international legal framework, chapter seven provides recommendations for achieving robust international regulation of offshore petroleum activities

to improve safety and prevent accidental pollution globally. Also, regulatory options for improved emergency response and liability regime, especially in a transboundary context are proposed. This includes ways to make OPOL or its concept have wider international application than it does presently.

Chapter seven also contains the general conclusion which sums up the thesis. It would accentuate the need for a robust international legal framework that addresses safety to prevent accidental pollution in offshore petroleum E&P, ensure effective response and access to justice that guarantees adequate and prompt payment of compensation even in transboundary cases.

1.10 Expected Contribution

This research would expand the existing body of knowledge by first making a novel strong case for global treaties to regulate offshore petroleum operations. Secondly, it would establish that unlike the shipping industry where international regulations may solely be used to address safety of shipping and maritime claims, independent of the flag State, offshore petroleum E&P could be different. It would need a cooperative and effective domestic legal regime backed by capable and credible domestic institutions with highly skilled and motivated personnel to guarantee safety of offshore petroleum operations and prevent accidental pollution. Also, an international legal framework must guarantee equal access to justice and ensure adequate and prompt settlement of liabilities in the event of accidental pollution, especially in a transboundary context. Third, a robust international legal regime would require all three levels of legislation- global, regional and national to be effective in addressing accidental pollution in a growing global industry and ultimately guarantee protection of the marine environment and its biodiversity.

CHAPTER TWO

GENERAL OVERVIEW OF THE LEGAL FRAMEWORK ON ACCIDENTAL POLLUTION FROM OFFSHORE PETROLEUM OPERATIONS

2.0 Introduction

The Rio+20 Summit recognized that "oceans, seas and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical to sustaining it".[1] Pollution is one of the identified threats to this vast marine environment.[2] There are many sources of marine pollution among which is offshore petroleum E&P.[3] Though many chemicals are used in offshore petroleum operations, the main pollutant that arises from such operations is oil.

As petroleum E&P activities progress further into deep and ultra-deep waters, such operations have become increasingly challenging and present a continuous threat to the marine environment. A range of international treaties are in place at global and regional levels to protect the marine environment against pollution from various sources.[4] The beginning of

[1] Rio+20 United Nations Conference on Sustainable Development (20-22 June 2012), *The Future We Want* A/Conf.216/L.1, Paragraph 158 (2012)

[2] Other identified threats to marine environment are climate change, overfishing, habitat loss and introduction of invasive species. See Nellemann, C., Hain, S. and Alder, J. (eds.), *In Dead Water – Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World's Fishing Grounds* (UNEP) p.26 (2008); International Programme on the State of the Ocean, *Implementing the State of the Oceans Report*, p.14-19 (2011); Sands, Philippe and Peel, Jacqueline, with Fabra, Adriana and MacKenzie, Ruth, *Principles of International Environmental Law* (Cambridge University Press, 3rd edition)p. 342 (2012)

[3] Others are land based sources, untreated sewage, eutrophication, hazardous substances like persistent organic pollutants (POP), siltation, invasive species, heavy metals and radioactive substances and acidification. See Sands, P., et al, supra note 2, p. 346

[4] Pollution from dumping, see the 1972 London Dumping Convention (adopted 29 December 1972 and into force 30 August 1975, 11 ILM 1294 (1972)) and 1996 Protocol to the London Convention (adopted 7 November 1996 and in force 24 March 2006, 36 ILM 1 (1997)) and Annexes IV and V of MARPOL 73/78; Pollution from land-based sources including through the atmosphere, see Agenda 21, UNCED Report, A/CONF.151/26/Rev.1 (Vol.1) (1993), Chapter 17, paras. 17.24 – 17.29; 1974 Convention for the Prevention of Marine Pollution from Land-Based Sources 13 ILM 352 (1974) (adopted 4 June 1974, in force 6 May 1978), 1992 OSPAR Convention and other regional sea conventions including UNEP Regional Sea Protocols; on Pollution from vessels, see MARPOL 73/78 and 2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ship (AFS) (adopted 5 October 2001 and in force 17 September 2008) AFS/CONF/26, 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments (adopted 13 February 2004, not in force) IMO Doc. BWM/CONF/36 and 2009 International Convention for the Safe and Environmentally Sound Recycling of Ships (adopted in Hong Kong 15 May 2009, not in force)

international initiative to regulate marine pollution from oil might be traced to the 1926 Washington Preliminary Conference on Oil Pollution in Navigable Waters.[5] The conference produced a document that metamorphosed into the 1954 International Convention for the Prevention of Pollution of the Sea by Oil.[6]

In 1958 three conventions relevant to marine pollution were adopted. Namely, the 1958 High Seas Fishing and Conservation Convention;[7] Continental Shelf Convention[8] and High Seas Convention.[9] The Continental Shelf Convention stipulates 500 metres safety zone for installation on the continental shelf. To ensure that installations do not constitute hazard to navigation and prevent accident or marine collision, the 1958 Continental Shelf Convention provides that due notice must be given of the presence of any installation on the continental shelf and complete removal of abandoned and disused installations.[10] This is to ensure that they do not constitute hazard to navigation. Article 24 of the High Seas Convention makes it obligatory for States to have legislation "to prevent pollution of the seas by the discharge of oil from ships or pipelines or resulting from the exploitation and exploration of the seabed and its subsoil" in consonance with any existing convention on the subject. In addition, States are to cooperate with the competent international organisations to prevent pollution from activities involving radioactive materials and other harmful agents.[11]

[5] See Report of the Preliminary Conference on Oil Pollution in Navigable Waters, 8-16 June 1926(US Government Printing Office) (1926) ; Sands P., et al, supra note 2, p.348
[6] 327 UNTS 3, (came into force on 26 July 1958) as amended in 1962, 1969 and 1971
[7] 559 UNTS 285 adopted on 29 April 1958 (came into force on 20 March 1966), Article 1(2) provides that "all States have the duty to adopt, or to cooperate with other States in adopting, such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas."
[8] 499 UNTS 311 (adopted 29 April 1958 and came into force on 10 June 1964). It defined the continental shelf "as referring (*a*) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (*b*) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands."
[9] 450 UNTS 82 (adopted on 29 April 1958 and came into force 30 September 1962)
[10] Id., Art.5(3) and (5)
[11] Id., Art. 25(2)

In response to major sea disasters, mostly in the shipping industry various legal instruments were adopted[12] at international and regional levels to protect the marine environment from oil pollution. But there was no global or regional convention that specifically and directly addressed pollution arising from offshore petroleum E&P before the 1990s. However, a number of treaties attempted to address pollution from offshore installations and artificial islands without detailed and specific focus on petroleum E&P structures.[13]

There are international instruments that provide non-binding obligations to protect the marine environment against pollution from offshore oil and gas activities. For instance, the 1972 Stockholm Declaration called on States to "take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."[14] There was a close succession of events that followed the Stockholm Declaration at the global and regional levels.[15] The United Nations Environment Programme established its Regional Seas Programme in 1976. These events culminated in the 1982 adoption of the United Nations Convention on the Law of the Sea (UNCLOS) which addressed, with some level of comprehensiveness, the issue of pollution of the marine environment by establishing framework rules and standards of global application in Part XII.[16]

[12] The 1969 Intervention Convention was adopted in response to the 1967 Torrey Canyon accident. This Convention metamorphosed to the 1971 Civil Liability Convention and Fund Convention and finally to the 1992 Civil Liability Convention and Fund Convention following incidents like the Amoco Cadiz in 1978, the Exxon Valdez in 1989 while the ill-fated Prestige incident of 2002 prompted various amendment to MARPOL 73/78 and the 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC)
[13] MARPOL 73/78 and UNCLOS which provides some framework provisions in Part XII are among such international treaties.
[14] Stockholm Declaration, Principle 7
[15] In December 1972 a global Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972 London Convention) was adopted, 1046 UNTS 120, in force 30 August 1975; regional Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (1972 Oslo Dumping Convention), 932 UNTS 3, into force on 7 April 1974. IMO saw through the adoption of the International Convention for the Prevention of Pollution from Ships in 1973 (MARPOL 73) and a Protocol in 1978, with a combination of both referred to as MARPOL 73/78.
[16] Sands, P., et al, note 2, p.349

The 1992 Rio Declaration on Environment and Development,[17] though a soft law, has over time influenced the content and interpretation of other international environmental law instruments. It contains important declarations on the protection of the environment that are applicable to marine pollution resulting from offshore oil and gas E&P. There are institutional guidelines and standards and private agreements that are also very relevant. These are instruments such as World Bank Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development, UNEP Environmental Law Guidelines and Principles on Offshore Mining and Drilling, and industry guidelines and standards of professional institutions like American Petroleum Institute (API).

This chapter gives an overview of global and regional legal regimes currently in place to address the issue of accidental pollution from offshore petroleum exploration and exploitation. It will be viewed from the angles of binding instruments and non-binding but persuasive instruments. These instruments are analysed on the basis of their relevance to prevention of accidental pollution in offshore petroleum operations and the consequential issues of emergency response, liability and compensation. Hence, the environmental principle of prevention and the twin principles that aid pollution prevention -polluter pays and precautionary principles would be the analytical tools.

2.1 The Principle of Prevention

The principle of prevention in international law can be traced to the Trail Smelter Arbitration[18] ruling that was re-echoed in Principle 21 of Stockholm Declaration and Principle 2 of Rio

[17] Rio Declaration on Environment and Development, 31 ILM 874 (1992)
[18] Handl, G, 'Environmental Security and Global Change: The Challenge to International Law'1 YbIEL 1 (1990); Lammers, J.G., 'International and European Community Law: Aspects of Pollution of International Watercourses' in W. Lang, H. Neuhold and K. Zemanek (eds), *Environmental protection and International Law* (London: Graham and Trotman/Martinus Nijhoff) 117 (1991)

Declaration. The principle of prevention has now assumed the status of customary international law.[19] Thus States are bound to observe due diligence to prevent transboundary pollution.[20]

As a customary rule, the principle of prevention originates from the due diligence that is expected of States in their territories and is closely connected to procedural requirements such as the need for environmental impact assessment.[21] The diligence obligation demands not just the adoption of appropriate rules and measures but equally a given level of vigilance in their enforcement. Also, the employment of administrative controls applicable to both public and private operators, such as supervision of activities by operators to protect other parties and public interests.[22]

The principle of prevention may manifest itself in different forms, including penalties and application of liability rules.[23] It is supported by a wide range of domestic environmental protection regulations that establish procedures for authorisation, and also international and national environmental standards.[24] Practices like environmental monitoring, auditing and performance evaluation, major hazard reporting[25] and the requirement to carry out

[19] Kiss, A. and Shelton, D, *International Environmental Law* (London: Graham & Trotman) 130 (1991); Taylor, P., An Ecological Approach to International Law (London: Routledge) 88 (1998)
[20] Zemanek, K., 'State Responsibility and Liability' in W. Lang, H. Neuhold and K. Zemanek (eds), *Environmental protection and International Law* (London: Graham and Trotman/Martinus Nijhoff) 192 (1991)
[21] Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010, p. 45-46, paras. 101 and 204, available at http://www.icj-cij.org/docket/files/135/15877.pdf last visited 13 January 2015
[22] Id., para. 197
[23] The IMO has over the years championed the use of liability and compensation as tools for the prevention of marine pollution which is a very significant contribution from the IMO, See Mensah, Thomas A., "Prevention of Marine Pollution: The Contribution of IMO" in *Pollution of the Sea – Prevention and Compensation*, Basedow, Jurgen and Magnus Ulrich (eds), Hamburg Studies on Maritime Affairs, Vol.10 (Springer Link) 41 at 59-60 (2007). According to Wolfrum, there are two perspectives of looking at liability for pollution damage. One as a means to enforce environmental standards or supplement existing enforcement mechanisms, and two, to balance various economic interest in the use of maritime space. Hence, most liability regimes did not provide for payment of compensation for purely environmental damages, that is, when the pollution did not result in economic loss or damage to property, see Rudiger Wolfrum, "Marine Pollution- Compensation or Enforcement" in *Pollution of the Sea – Prevention and Compensation*, Basedow, Jurgen and Magnus Ulrich (eds), Hamburg Studies on Maritime Affairs, Vol.10 (Springer Link) (2007) p.129
[24] Sands, P., et al., supra note 2, pp. 201-202
[25] Following the Deepwater Horizon disaster of April 2010, a strict major hazard reporting requirement has been introduced by the European Commission under the EU Directive 2013/30/EU on Safety of Offshore Operations in Articles 12 and 13

environmental impact assessment are relevant to prevention of pollution.[26] Other tools employed to prevent environmental harm include environmental management plan and information reporting.

Cooperation which is emphasised by UNCLOS is also an effective prevention tool. Cooperation enables global or regional action in developing rules against pollution and helps in the actual act of implementation and enforcement of rules and standards which, in effect, deters further breach of international law.[27] According to the International Tribunal on the Law of the Sea (ITLOS), the duty to co-operate is a fundamental norm in the prevention of pollution of the marine environment in Part XII of UNCLOS and general international law.[28]

The principle of prevention focuses on eliminating or minimizing environmental damage. Hence, States while enjoying their right of sovereignty must anticipate pollution or environmental damage and take preventive actions.[29] This would involve the enactment of regulations that require the application of basic environmental law principles including the precautionary and polluter-pays principles;[30] the use of the best available technique (BAT);[31] best environmental practice (BEP),[32] and clean technology. The meaning and scope of BAT

[26] See *Pulp Mills case*, para. 204
[27] For instance, while declining the request for provisional measures by Ireland in the Mox Plant Case, the ITLOS advised parties to cooperate to prevent harm to the marine environment. See The Mox Plant Case (Ireland v United Kingdom) Order on request for provisional measures, Para.89, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_10/Order.03.12.01.E.pdf last visited 13 January 2015
[28] The *MOX Plant case*, Case no. 10, 41 ILM 405 (2002), Application of 25 October 2001, para. 33, The Mox Plant Case (Ireland v United Kingdom) Order on request for provisional measures, para.82 available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_10/Order.03.12.01.E.pdf last visited 13 January 2015
[29] De Sadeleer, Nicholas, *Environmental Principles: From Political Slogans to Legal Rules* (Oxford Press) p.64 2005
[30] Id., pp.82-89 2005
[31] For instance under the EU Directive 2008/1/EC Integrated Pollution Prevention and Control (IPPC) "installations are to operate in such a way that all the appropriate preventive measures are taken against pollution, in particular through the application of best available techniques", available athttp://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:024:0008:0029:en:PDF , see also Pollution Control Handbook 2009, *The Essential Guide to UK and European Pollution Control Legislation* (Environmental Protection UK) p. 45 (2009). This is also a requirement under the Barcelona Convention and its Offshore Protocol, OSPAR Convention and1992 Helsinki Convention
[32] OSPAR Convention and 1992 Helsinki Convention

and BEP may differ in different legal instruments and regimes. EU Directive 2008/1/EC which focuses mostly on emission control defined BAT as "the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment."[33] In the OSPAR Convention, BAT is defined as "the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste" while BEP means "the application of the most appropriate combination of environmental control measures and strategies."[34]

The main use of the preventive principle is in issuing authorisation that set out the conditions for administrative controls, use of fiscal measures and criminal penalties in some cases. Prevention may also be carried out using fiscal measures. These 'economic instruments' referred to as eco-taxes are meant to encourage polluters to curb their releases.[35]

The principle of prevention rests on a certain mastery of environmental risk and the higher the risk, the greater the diligence required from the polluter.[36] For the preventive principle to be effective its scope should be given a precise definition. The precautionary principle may help in this regard to support the preventive principle by providing grounds for authorities to act in

[33] EU Directive 2008/1/EC, Art. 2(12). Art.2(12)(c),(a) and (b) provides that "Best" in relation to techniques means "the most effective in achieving a high general level of protection of the environment as a whole", "Techniques" includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned" and "available techniques" means those techniques which have been developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the cost and advantage, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator."
[34] OSPAR Convention, Appendix 1. Similarly, being terms with no universal definition, BAT in the Helsinki Convention means 'the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges', see Helsinki Convention, Regulation 3 of Annex II
[35] De Sadeleer, N, supra note 29 at p.72-73
[36] Id., p.80

the absence of a conclusive proof. Also of collaborative value and importance to the effectiveness of prevention is the polluter pays principle.[37] The Organisation for Economic Cooperation and Development (OECD) recommended that the polluter pays principle be taken into consideration when calculating cost of prevention of oil spills at sea.[38]

There are circumstances when the constraint posed by preventive measures may range between notification of obligations and absolute requirement and. Activities with some level of emission are permitted as the factors of production that generate economic wealth and social wellbeing is reconciled with the need to guarantee an environment of high quality.[39] For offshore petroleum operations, improved safety to prevent major hazard is the focus of regulatory instruments and not the freezing of such operations.

2.2 The Polluter Pays Principle

The polluter-pays principle was first adopted in the 1972 OECD Council Recommendation on Guiding Principles concerning International Aspects of Environmental Policy. Initially, the principle was not intended to eliminate all forms of pollution but focused on allocating cost of pollution prevention and encouraged rational use of limited environmental resources.[40] By virtue of an OECD 1989 Recommendation the Polluter-pays principle became applicable to accidental pollution.[41] The principle was set out in the First Environmental Action Programme (1973-76) of the European Community and procedures for the application of the principle were stated in Recommendation 75/436 of 3 March 1975. Recommendation 75/436 provides that

[37] Id., p.90
[38] OECD, Combating Oil Spills (OECD Publication, Paris) (1982), cited in Patricia Park, *International Law for Energy and the Environment*, 2nd ed. (CRC Press, Taylor & Francis Group) 96 2013
[39] De Sadeleer, supra note 29, p.78
[40] C(74) 223 (Final), OECD, 1974
[41] Recommendation on the Application of the Polluter-Pays Principle to Accidental pollution, C(89) 88 (Final), OECD, 1989

"natural or legal persons governed by public or private law who are responsible for pollution must pay the cost of such measures as are necessary to eliminate that pollution or to reduce it so as to comply with the standards or equivalent measures." Furthermore, Article 174(2) of the Single European Act (SEA) provides that "action by the Community relating to the environment shall be based on the principle that the polluter should pay."

According to the OECD the Polluter-Pays Principle is "to be used for allocating cost of pollution prevention and control measures to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment". Also, the polluter should bear the expenses for carrying out measures required by the regulator to ensure a safe environment.[42] The 1991 OECD Recommendations on the Use of Economic Instruments in Environmental Policy called for the cost of environmental damage caused by polluters, as well as the cost of preventing and controlling pollution to be covered by the polluter pays principle.[43]

The role of the State is to use standards and charges to put the polluter pays principle into effect.[44] The principle in its strict sense or 'standard' includes cost of pollution control equipment, cost of government provision of pollution removal infrastructure and services, administrative cost of government in overseeing pollution control and sometimes include cost of clean up after accidental spill or long term routine pollution.[45] It requires the polluter to take responsibility for the external cost of his pollution. Hence, the principle is an economic rule of cost allocation whose source is embedded in the theory of externalities. The polluter (a combination of producer and consumer) is to wholly take responsibility for all the cost of pollution without shifting any cost of pollution to the community. Apart from the preventive function of the polluter pays principle, it also has the economic integration, redistribution and

[42] C(72) 128 (Final), OECD, 1972
[43] Id., p.38. See also de Sadeleer, supra note 29, p.37
[44] de Sadeleer, supra note 29, p.28
[45] Beder, Sharon, *Environmental Principles and Policies: An Interdisciplinary Approach* (University of New South Wales Press) p. 37 2006

curative functions.[46] The polluter pays principle is a widely accepted principle as many countries have adopted it in international agreements and applied it in their domestic laws.[47]

2.3 The Precautionary Principle

The first reference to the precautionary principle in international law was in the 1984 Bremen Ministerial Declaration of the International Conference on the Protection of the North Sea.[48] Parties declare that "conscious that damage to the marine environment can be irreversible or remediable only at considerable expensive and over long periods and that, therefore coastal States and the EEC must not wait for proof of harmful effects before taking action..." It got universal recognition at the 1992 UN Conference on Environment and Development as all three documents adopted at the conference (the Rio Declaration, United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biodiversity) contained the precautionary principle. The precautionary principle has been applied by international courts like the International Court of Justice (ICJ). In the *Gabcikovo-Nagymaros Case* it was applied to justify a suspension of dam work on the Danube for fear it may cause significant or irreversible damage.[49] The ITLOS also applied the principle in the Southern Bluefin Tuna cases[50] where based on scientific uncertainties the tribunal ruled that urgent action be taken to avert deterioration of southern blue tuna stock.

Precautionary principle or action is required where the nature and extent of risk and damage are uncertain. Uncertainty may not only be the probability of the occurrence of a serious event

[46] Beder, supra note 45, pp 34-37
[47] Beder, S., supra note 45, p. 34
[48] de Sadeleer, supra note 29, p.94
[49] *Gabcikovo-Nagymaros* (Hungary v. Slovakia) ICJ Rep 7 (1997), judgement para. 52
[50] See Southern Bluefin Tuna cases (Australia v. Japan; New Zealand v. Japan), Provisional measures, Order of 27 August 1999 (ITLOS Case no. 3 & 4

but may also be the seriousness of the consequences.[51] Once the risk is known then a preventive action is required.[52] The application of the precautionary principle is based on scientific evidence of harm to avoid a situation where concerns would be seen as irrational which aim at unrealistic zero risk level which may affect technological innovations and lead to paralysis and industrial stagnation.[53] The principle is believed to have steadily expanded its dominion in the area of marine pollution where there is no sufficient understanding of the abundant ecological data on pollution but there is much concern.[54] The caution being applied to authorisation of oil and gas E&P in the Arctic is an expression of the precautionary principle.

The principle is contained in most conventions for the protection of the marine environment such as the 1976 Barcelona Convention,[55] 1992 Helsinki Convention,[56] 1992 OSPAR Convention[57] as well as the 1990 OPRC.[58] It is also reflected in other international environmental treaties like the 1992 UNFCCC, 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, 1992 UN Convention on Biodiversity and 2001 Stockholm Convention on Persistent Organic Pollutants (POPs). Interestingly, the 1995 UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks applied the principle to

[51] Id., p.54; Sands P., et al, supra note 2, pp. 218-219
[52] Id., p.47
[53] Id., p.52
[54] De Sadeleer, supra note 29, p.94
[55] Art.4(3)(a) provides that the contracting parties shall apply, in accordance with their capabilities, the precautionary where there are threats of serious or irreversible damage and not use lack of full scientific certainty as a reason for postponing cost-effective measures to prevent environmental degradation.
[56] In Art.3(2) agreed to take 'preventive measures when there is reason to assume that substances or energy introduced, directly or indirectly, into the marine environment may cause herm to human health, harm living resources and marine ecosystem, damage amenities or interfere with other legitimate uses of the sea, even where there is no conclusive evidence of a causal relationship between inputs and their alleged effects'
[57] Parties obligation in Art.2(2)(a) is to apply 'the precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects'.
[58] The 'importance of precautionary measures and prevention in avoiding oil pollution in the first instance' and to take 'account of the polluter pays principle as a general principle of international environmental law' was emphasised in the preamble.

conservation, management and exploitation measures.[59] It provides in Article 6(2) that "States shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures."

Dealing with environmental risk is the common denominator of the polluter pays, precautionary and prevention principles and as such they complement each other and should operate together.[60] Thus, a regulatory regime could be made to be anticipatory, preventive and curative in its approach to protection of marine environment. The question is how well international law has applied these principles to offshore petroleum operation? Before proceeding to the overview of international legal instruments a brief note on the legal status of offshore installations would be made.

2.4 Legal Status of Offshore Installations

The legal status of offshore oil and gas installations is not entirely clear and opinions on this issue in legal literature are divided. The question is if offshore installations should be regarded as vessels for the purpose of global and regional treaties that deal with marine pollution from ships? There are certain basic characteristics of "a ship" which can be distilled from various municipal laws and dictionary definitions. These are: movability, seagoing, navigability and being used for transport of passengers and or goods.[61]

[59] Nelson, D. 'The Development of the Legal Regime of High Seas Fisheries' in Boyle, A. and Freestone, D. (eds.) *International Law and Sustainable Development* (Oxford University Press) 128 (1999)
[60] De Sadeleer, supra note 29, p.369
[61] UK Merchant Shipping Act 1995, c.21 Part XIII s. 313 available at http://www.legislation.gov.uk/ukpga/1995/21/section/313 ; Nigerian Merchant Shipping Act, s.445 available at http://faolex.fao.org/docs/pdf/nig92406.pdf ; Collins English Dictionary, Millennium Edition (HarperCollins Publishers) p.1418 (1999); The New Shorter Oxford English Dictionary on Historical Principles, Lesley Brown (ed.) Vol.2 (Clarendon Press, Oxford) 2828 (1993); Random House Unabridged Dictionary, Stuart Berg Flexner (ed.) (Random House New York) 1766 1983

Based on these characteristics, MODUs may meet the definition of ship but a fixed oil installation may not be considered a ship. However, a MODU may cease to be a ship at the point of being stationed and engaged in drilling activities.[62]

International law and its commentators do not provide uniform definition or single view on the status of offshore installations[63] as they are at times classified as a ship in some conventions.[64] Over and above all, the legal status of anything is determined by law. Therefore, the status of an offshore oil and gas installation within the context of a convention will be determined by the provisions of that convention.[65] For instance, while fixed platforms may not actually be a ship or vessel, they are assumed to be ship for the purposes of some provisions of MARPOL 73/78 and the 2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ship.[66]

The Helsinki Convention defines "ship" to "mean a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms".[67] In the absence of express exclusion, offshore oil and gas installations may be regarded as "ship" and governed by the Convention. This is especially the case when "offshore activity" is defined as "any exploration and exploitation of oil and gas by a fixed or floating offshore installation or structure including all associated

[62] For a detailed consideration of the legal status of offshore oil rigs see Esmaeili, Hossein, *The Legal Status of Offshore Oil Rigs in International Law*, 50 RHDI 107 (1997); Kashubsky, Mikhail, *Offshore Petroleum Security Threats, Target Attractiveness, and the International Legal Framework for the Protection and Security of Offshore Petroleum Installations*, Doctor of Philosophy Thesis, Faculty of Law University of Wollongong, Target 2011, available at http://ro.uow.edu.au/theses/3662 accessed on 18 November 2013

[63] Esmaeili, Hossein, Id., p.121-122

[64] An example is the 1992 Helsinki Convention, that defines "ship" to mean "a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms" (Article 2)

[65] Id., p.137; In the UK a boat propelled by oars is not considered a ship according to section 742 of the Merchant Shipping Act, 1894. However, it is a 'ship' within the definition of the Shipbuilding Industry Act, 1967

[66] See Art. 2(9) which defines "Ship" as "a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft, fixed or floating platforms, floating storage units (FSUs) and floating production storage and off-loading units (FPSOs)"

[67] Helsinki Convention, Art. 2(3)

activities thereon", while "offshore unit" means "any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation or production activities, or loading or unloading of oil."[68]

If offshore installations are accepted as ship for all intent and purposes under international law their regulation, at least in terms of safety and pollution related issues, would be undertaken by the International Maritime Organisation. In which case, regulations and treaties like the civil liability conventions would become applicable to offshore installations and operations. Also, the IMO may in line with its mandate adopt regulations relating to offshore installations, enforce them and apply sanctions where necessary.

2.4.1 The IMO Draft Convention on Offshore Units, Artificial Islands and Related Structures

The IMO attempted at some point to develop an instrument dealing with offshore oil and gas installations. The process commenced in 1977 when the IMO requested the Comite Maritime International (CMI) to draft a convention relating to oil rigs and pollution.[69] The CMI came up with a 'Draft Convention on Offshore Mobile Craft' in 1977, known as the "Rio Draft".[70] This document was reviewed in 1994 and became known as the "Sydney Draft". A working group was set up to produce a more comprehensive document to address deficiencies in the Sydney Draft.[71]

[68] Id., Annex VI, Regulation 1(1) and (2); Annex VI is on prevention of Pollution from offshore activities. Each Offshore unit is to have an approved pollution emergency plan and a reporting obligation imposed on operators of offshore units, see regulations 6 and 7 of Annex VI
[69] Kashubsky, Mikhail, *Marine Pollution from the Offshore oil and Gas Industry: Review of Major Conventions and Russian Law* (Part 1) 151 Maritime Studies 1, 5 (2006)
[70] CMI Documentation, vol. 1, 28 (1977); vol. III, 124
[71] White, Michael, *Offshore Craft and Structures: A Proposed International Convention*, 18 Aust. Mining and Pet. Law Journal 21, 22 (1999)

The Rio Draft clarifies the extent to which existing rules apply to structures that might not be considered as ships. It did not address issues of accidental pollution and disasters. On the other hand, the Sydney Draft took a look at existing maritime conventions on issues of collision, salvage, arrest and limitation of liability with a view to applying them to "mobile craft" as defined. This approach was criticised by Canadian Maritime Law Association (CMLA) on the ground that it attempts to apply existing circumstances, designed for ships, to structures which, in its opinion, are not ship.

The initiative to have a convention on MODUs was opposed by the International Association of Drilling Contractors (IADC) and the United States Maritime Law Association who saw no need for comprehensive international treaty for oil rigs. Also, the IMO and CMI on their part failed to speed up the process.[72] Nevertheless, in 2001 the CMI working group and the CMLA came up with a "Draft Convention on Offshore Units, Artificial Islands and Related Structures used in the Exploration for and Exploitation of Petroleum and Seabed Mineral Resources 2001" (Canadian Draft). This draft was published and discussed at the 2004 CMI Conference in Vancouver.[73] It received overall support at the conference with the understanding to work towards an improved document. But this effort is yet to be conclusive.

The Canadian draft of May 2001 provides for all offshore units to have nationality and ownership registered in line with the laws of the State it is domiciled or in accordance with the provisions of the convention.[74] In relation to safety, owners of Artificial Island and Related Appurtenances operated in physical association with an Offshore Unit shall be required to maintain a quality assurance management and operations system that are compatible with ISM

[72] See Allen, Jacqueline, *A Global Oil Stain-Cleaning Up International Conventions for Liability and Compensation for Oil Exploration/Production*, 25 Austl & N.Z Mar L.J 90, 91 (2011).
[73] The Canadian draft is quite comprehensive as it addresses various aspects of offshore oil and gas exploration, like the issue of liability. See Allen, J, Id
[74] Canadian Draft, Arts.3.1 & 3.5

Code requirements applicable to the said Offshore Unit.[75] Also, the operator of an Offshore Unit shall be required by the flag State to appoint a single individual to be in command of the unit to direct safety operation, order movement or evacuation of the Unit without prior reference to owner, licensee or other management or government authority.[76] Moreover, to guarantee good and safe working environment, coastal States are to adopt laws or licencing terms that allow workers of offshore units to have confidential communication with regulatory authorities.[77] Though the Canadian draft required owners of offshore units to maintain insurance or other financial security,[78] it failed to provide requirements for design, construction, equipment and personnel for such units engaged in exploration and exploitation of petroleum and seabed mineral resources.

2.5 Global Regulation of Offshore Accidental Pollution

There are two binding international treaties with global coverage which apply to offshore petroleum operations. These are the 1982 United Nations Convention on Law of the Sea (UNCLOS) and the 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC). Most provisions of UNCLOS are regarded as having attained the status of customary international law because they reflect general practice of States as its principles and provisions are constantly referred to by other treaty regimes at global and regional levels.[79]

[75] Id., Art.8.1
[76] Id., Art.8.2. From the lessons of the Macondo blowout, this is very essential as it could break the organisational bureaucracy that delays emergency decision making in times of a looming disaster.
[77] Id., Art.8.5(ix)
[78] Id., Art.14.1
[79] Sands, P., et al, supra note 2, p. 350. Examples are 1992 OSPAR, Agenda 21, para. 17.1 and 17.22

However, legal commentators such as McConnell and Gold have argued that the provisions of Part XII are guiding or interpretative principles as opposed to standard setting principles because they assume the existence of agreed standards, rules and practices external to UNCLOS. The provisions more or less serve as "blueprint" or "umbrella" for other more locally or contextually responsive legislation or regime.[80] Klein views standards and language used in provisions such as Articles 200, 204, 207, 208, 210 and 212 as flexible and refers to them as "soft law". But Klein admits that the mandatory language employed in the provisions, makes them binding, mandatory and unqualified obligations.[81] But the provisions of UNCLOS are "hard law".

2.5.1 Prevention of Accidental Pollution

In the EEZ, coastal States have exclusive right to authorize and regulate the construction, operation and use of artificial islands, installations and structures for the purposes of exploring and exploiting its natural resources.[82] They have similar sovereign rights over the continental shelf[83] where they can authorize and regulate drilling for all purposes.[84] Article 56(1) of UNCLOS confers on a coastal State the sovereign right to explore and exploit resources in its EEZ and a responsibility to protect and preserve the marine environment.[85]

States are required to prevent, reduce and control marine pollution. Part XII identifies and makes detailed provisions on various sources of marine pollution in addition to other

[80] McConnell, Moira L. and Gold, Edgar, 'The Modern Law of the Sea; Framework for the Protection and Preservation of the Marine Environment?' 23 Case W. Res Int'l Law 83, 88 (1991)
[81] See Klein, Natalie, *Dispute Settlement in the UN Convention on the Law of the Sea* (Cambridge University Press) pp.151-152 (2005); see also Kimball, Lee A., 'The Law of the Sea Convention and Marine Environment Protection', 7 Geo Int'l Envtl L. Rev, 745, 746 (1995)
[82] UNCLOS, Art. 60(1)
[83] Id., Art. 77(1)
[84] Id., Art. 81
[85] This includes other economic use such as production of energy from the water, currents and winds, the establishment and use of artificial islands, installations and structures and marine scientific research.

obligations imposed on coastal States, port States and flag States. It establishes rules on information sharing, scientific research, monitoring, environmental assessment, emergency response, enforcement and liability.[86]

UNCLOS reaffirms the long established principle that States have the sovereign right to exploit their natural resources based on their own environmental policies and a corresponding obligation to protect and preserve the marine environment.[87] Also, States are to prevent transboundary pollution arising from activities within their maritime jurisdiction.[88] These obligations apply to pollution from offshore petroleum operations and States are required to put in place measures to address pollution from oil exploration and exploitation activities. This obligation is contained in Article 194(3)(c) which states:

> "3. The measures taken pursuant to this Part shall deal with all sources of pollution of the marine environment. These measures shall include, inter alia, those designed to minimize to the fullest possible extent: …
>
> (c) pollution from installations and devices used in exploration or exploitation of the natural resources of the seabed and subsoil, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, and regulating the design, construction, equipment, operation and manning of such installations or devices;"[89]

[86] Id., Arts 21(1)(f), 42(1)(b) and 54
[87] Arts 192 and 193 of UNCLOS
[88] Art 194(2) reiterates the principled laid down in the *Trail-Smelter Arbitration*. The article provides: "States shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with this Convention."
[89] According to Niels-J. Seeberg-Elverfeldt, the reference to seabed and subsoil exploration includes the continental shelf, see Niels-J-Seeberg-Elverfeldt, *State responsibility for Transjurisdictional Oil Pollution Damage Resulting from the Exploration and Exploitation of the Continental Shelf*, 2 N.Y.L. Sch. J. Int'l & Comp L. 1 (1980-1981)

The above provision requires States to "minimize to the fullest possible extent" pollution from installations and devices used in offshore operation; put in place "measures for preventing accidents and dealing with emergencies". This imposes an obligation to prevent accidental pollution from offshore petroleum operations and prepare for emergency response.[90]

Second, the measures they are obligated to apply, by the provisions of Article 194(1), is the "best practicable means at their disposal and in accordance with their capabilities". This subjective provision gives room for all States to do their best to prevent marine pollution. Though commentators like Klein are sceptical about the effectiveness of such framework provisions in UNCLOS.[91] While the umbrella nature of UNCLOS provision might be positive, the absence of definite standards established by subsequent conferences is the undoing in the increasing threat of accidental pollution from offshore petroleum operations.

In addition to the general obligation on all States to prevent marine pollution more specific provisions directed at coastal States in respect of activities on the seabed are contained in articles 208 and 214. Article 208(1) reads:

> "Coastal States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment arising from or in connection with seabed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction, pursuant to articles 60 and 80."

[90] There is no clear mention of offshore oil and gas operations but the reference to "exploration or exploitation of the natural resources of the seabed and subsoil" encapsulates both mining of mineral and oil and gas E&P. To Nordquist, the installations and devices referred to signify something of a "more permanent character"; See *United Nations Convention on the Law of the Sea 1982: A Commentary,* Vol.4 (Nordquist, Myron H., ed.) (Martinus Nijhoff Publishers) p.67 (1991). What is of a "more permanent character" is debatable. Certainly all types of installations and devices used in exploration and exploitation activities offshore are of permanent character while the operations last.

[91] Klein observed that "an examination of UNCLOS provisions in terms of protection and prevention of marine environment shows little detail as to the substance of the duty imposed by the convention. Rather it emphasises co-operation and or the establishment of international or regional standards in the future". See Klein, N., supra note 81, p.149 (2005)

This obligation seems broader and progressive than that imposed by Article 207 that deals with marine pollution from land based sources. Article 207(1) imposes obligation on States to adopt laws and regulations while "taking into account internationally agreed" rules and standards. To take into account does not necessarily mean ensuring that the laws or rules must be as effective as international ones. But Article 208 makes it mandatory for laws and regulations adopted by States not to be less effective than international rules and standards.[92] Obligation is also imposed on States to cooperate and establish global and regional rules, standards and recommended practices and procedures regarding pollution from seabed activities. This could be actualised through competent international organisations or diplomatic conferences. Thus allowing for flexibility in the absence of a specific international organisation with exclusive competence over offshore operations.[93] The territorial sovereignty in the territorial sea gives right to 'sovereign rights' over the continental shelf as provided in Article 77.[94] Article 208 applies to all seabed and activities within a coastal State's jurisdiction and develops further the general obligations for all States as provided in Article 194.

In relation to inherently dangerous activities like offshore petroleum E&P, Article 204(2) makes it mandatory for States to monitor their risk or effects of pollution. They are to keep under surveillance activities they permit to determine whether they are likely to pollute the marine environment. By this provision States are generally expected to, as part of safety measures, constantly monitor and keep under close watch offshore operations as they increasingly progress into very challenging deep and ultra-deep waters. This provision is a further codification of Principle 15 of Stockholm Declaration which calls for proactive,

[92] UNCLOS Art. 208(3)
[93] UNCLOS Art. 208(5); Nordquist, Myron H., supra note 90, p.130
[94] Article 77 of UNCLOS confers right on coastal States to exercise sovereign rights over the continental shelf for the purpose of exploration and exploitation of the natural resources therein. See Nordquist, Myron H., supra note 90, p.147

precautionary and preventive action to avoid pollution. But the obligation is with much discretion as States are to "endeavour, as far as practicable" to fulfil the obligation.[95]

The above UNCLOS provisions reflect the prevention, precautionary and polluter pays principles and together they integrate that of sustainable development that should be considered by States in the exploitation of marine resources. In effect, regulations of offshore petroleum E&P and environmental protection from accidental spills should be addressed in an integrated method.

The OPRC recognised "the serious threat posed to the marine environment by oil pollution incidents involving ships, offshore units, sea ports and oil handling facilities".[96] They emphasised the importance of precautionary measures and prevention in avoiding oil pollution in the first instance, and the need for strict application of existing international instruments dealing with maritime safety and marine pollution prevention.[97] The need for international cooperation with the application of the principle of common but differentiated responsibility was also accentuated in the preamble of the OPRC.

2.5.2 Emergency Response

While there is no global convention specifically on emergency response to accidental pollution resulting from offshore petroleum exploration and exploitation, the 1990 OPRC is relevant to such operations. Its definition of "ship" as "a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, and floating craft of any type"; and "offshore unit" as "any fixed or floating offshore installation or

[95] UNCLOS Art. 204(1); See Nordquist, Myron H., supra note 90, p.115
[96] OPRC, preamble
[97] Id.

structure engaged in gas or oil exploration, exploitation or production activities, or loading or unloading of oil" applies to offshore operations.[98]

The level of response in the event of an emergency is subject to the judgement of each State[99] which may not guarantee a uniform standard of implementation of the Convention. This is because it is not every region or country that has the necessary personnel and equipment to contribute and respond effectively to emergencies. Moreover, priorities of countries and regions differ. For example, developed countries are focused on improved safety of operation aimed at preventing the occurrence of major hazards. Conversely, developing countries like Angola and Tanzania in East Africa and Nigeria and Ghana in West Africa may be focused on attracting investors to their offshore petroleum industry.[100] This may include lax environmental regulations that undermine health, safety and environment.

The OPRC was not adopted with the possibility of a disaster, involving oil and gas production facilities, in the magnitude of the Macondo blowout. It was adopted following the Exxon Valdez incident of 1989. The volume of oil leaked into the marine environment is not comparable to the millions of gallons of oil that oozed into the environment in the Macondo blowout. The Convention may need a review to guarantee effective, prompt cooperative response to a Macondo kind of disaster. Detailed analysis and possible areas of amendments are discussed in chapter five.

[98] "Ship" and "offshore unit" are defined in Art. 2(3)&(4) of the OPRC

[99] Id, Arts. 6(2) and 7 as an example uses the phrases "within its capability" and "subject to their capability and the availability of relevant resources." See also Art. 9(2)

[100] Nigeria's current focus in the oil and gas industry is the passage of a new petroleum industry bill into law and hoping that the law will boost foreign investment in the oil and gas sector of the economy and environmental protection is not prioritised.

2.5.3 Liability and Compensation for Accidental Pollution

An aspect of offshore accidental pollution of great concern is liability and compensation, especially when the damage is transboundary. Liability which is seen as making reparation or other forms of compensation is consequential to a failure to act appropriately by act or omission.[101] Responsibility requires States to comply with all international conventions and regulations on protection of the marine environment. Article 235 of UNCLOS provides for responsibility and liability for failure to protect and preserve the marine environment. While Article 235(1) relates to State responsibility in international law for failure to fulfil its international obligation of pollution prevention, Article 235(2) relates to ensuring that private civil liability laws are in place and enforced against institutions and individuals who pollute the marine environment.

UNCLOS while being unequivocal on the obligation of States to take preventive measures aimed at averting marine pollution[102] neither imposes nor advocates any specific form of liability regime. States are mandated to cooperate in the implementation of existing international law and advance the development of international law of responsibility and liability.[103] This is a safeguard provision to accommodate later developments. In that regard it anticipates the development of non-legal procedures like internationally managed insurance schemes, and remedies for assessing damage and compensation for it.[104] Article 235(3) also places emphasis on "assuring prompt and adequate compensation" for damage caused by pollution of the marine environment, and the obligation of States in this regard. But, the responsibility to "further development of international law relating to responsibility and liability for the assessment of and compensation for damage, and the settlement of related

[101] Nordquist, Myron H., supra note 90, p. 412
[102] See Niels-J. Seeberg-Elverfeldt, supra note 89 at p.43; See UNCLOS Arts 207- 212
[103] UNCLOS, Art. 235(3)
[104] Nordquist, M. H., supra note 90, p.412

disputes" is not within the exclusive competence of any international organisation or diplomatic conference. This is one factor that has implication on the gradual development of rules and regulations governing offshore petroleum at the global level.

2.6 Regional Regulation of Offshore Accidental Pollution

Regional instruments are very important in the protection of marine environment. The three regional sea conventions under review have varying level of regulation of offshore petroleum operation.

2.6.1 Prevention

OSPAR Convention is applicable to offshore oil and gas exploration and exploitation and obligates parties to "take all possible steps to prevent and eliminate marine pollution" and in appropriate situation restore damaged marine environment.[105] It provides for the application of polluter pays and precautionary principles in addressing marine pollution,[106] including pollution from fixed and floating offshore platforms.[107]

In addition to the Convention and Bonn Agreement, there are decisions and recommendations of the meetings of the parties that all form part of the OSPAR regime.[108] For instance, OSPAR

[105] 1992 OSPAR, Arts 2(1) and 5. The obligation to 'eliminate' marine pollution in this convention is a positive improvement on UNCLOS which used the word 'control'.
[106] 1992 OSPAR Annex I, Art. 2(2). These obligations are much more mandatory and binding than the provisions of UNCLOS in view of the use of the word 'shall'.
[107] Id., Art. 5. See generally annex III that addresses prevention and elimination of pollution from offshore sources
[108] OSPAR Recommendation 2011/8 amending OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations as amended; OSPAR Recommendation 2006 on Management Regime for Offshore Cuttings Piles; OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations and OSPAR Decision 2000/3 on the use of Organic Phase Drilling Fluids (OPF) and the discharge of OPF-Contaminated Cuttings; OSPAR Recommendation 2012/5 for a risk-based approach to the Management of Produced Water Discharges from Offshore Installations; OSPAR Recommendation 2010/18 on the prevention of

Recommendation 2003/5 promotes the use and implementation of environmental management systems by the offshore industry. Its goal was to ensure that by the end of 2005 all operators within OSPAR maritime area have in place Environmental Management Systems (EMS) that are of international standards.

The Barcelona Convention[109] which was revised in 1995, is one of the early regional conventions that addressed marine pollution.[110]The Convention calls for the application of the precautionary and the polluter pays principles to prevent and minimize marine pollution.[111] While it addresses pollution from seabed exploration and exploitation activities[112] there was no detailed provision on pollution from offshore installations. A 1994 Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and Subsoil[113] (Offshore Protocol) was adopted to provide detailed provisions to address offshore oil and gas exploration and exploitation activities in the Mediterranean Sea.

The Offshore Protocol's aim is to "prevent, abate, combat and control pollution" resulting from offshore activities using the "best available techniques, environmentally effective and economically appropriate" measures.[114] As precaution, operators are to report any incidence or near misses on any offshore installation.[115]

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significant acute oil pollution from offshore drilling activities; OSPAR Recommendation 2010/3 on a Harmonised Offshore Chemical Notification Format (HOCNF) that[108] replaces OSPAR Recommendation 2000/5 as amended by OSPAR Recommendations 2005/3 and 2008/2; OSPAR Recommendation 2010/4 on a Harmonised Pre-screening Scheme for Offshore Chemicals that replaces OSPAR Recommendation 2000/4 as amended by OSPAR Recommendation 2008/1; OSPAR Recommendation 2005/2 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that Are, or Contain Added Substances, Listed in the OSPAR 2004 List of Chemicals for Priority Action

[109] 1102 UNTS 27 (1976), The Barcelona Convention entered into force on February 12, 1978

[110] When this revised one came into force 9 July 2004 it became referred to as *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean*

[111] Art. 4(3) of 1995 Barcelona Convention

[112] Art. 7 of 1995 Barcelona Convention

[113] Adopted on October 14, 1994 and entered into force on March 24, 2011 (commonly referred to as the Offshore Protocol)

[114] 1994 Offshore Protocol, Art. 3(1)

[115] Offshore Protocol, Art.17

Authorization for exploration and exploitation is to be premised on the technical competence and financial capacity to undertake offshore operation.[116] Also, installations must be constructed in line with international standards and practice.[117] Safety measures in all offshore installation must meet the criteria set in Annex VI of the Protocol before authorisation by the Competent Authority. Such safety measures should be in respect of the design, construction, placement, equipment, marking, operation and maintenance of installations.[118] These measures if implemented and closely monitored throughout the life circle of the installation would guarantee safety of the operations and prevent major accidents. Abandoned and disused installations are to be removed in line with international guidelines put in place by institutions like the IMO. This is to ensure safety of navigation and take into consideration other legitimate uses of the sea.[119]

Similarly, the 1992 Helsinki Convention obligates member parties to individually or collectively take measures to 'prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea Area and the preservation of its ecological balance.'[120] Annex VII addresses prevention of pollution from offshore activities. In line with the principle of prevention, the Convention incorporates the precautionary and polluter pays principles and encourages the use of best available technology and best environmental practice.[121] These provisions are dynamic in the sense that they are to be applied in line with advances in technology, scientific knowledge and understanding, as well as change in economic and social

[116] The European Union seems to have adopted these conditions as basis for the grant of licences, see Article 4 of the 2013 EU Directive on Offshore Safety
[117] 1994 Offshore Protocol, Art.4(1)
[118] Id., Art.15(1)
[119] Id., Art. 20. This provision is similar to the UNCLOS requirement as opposed to the 1958 Continental Shelf Convention that required total removal of disused offshore installations.
[120] Art. 3(1)
[121] Art. 3(2)-(4); Annex II provides criteria for the Use of Best Environmental Practice and best Available Technology. The "Best Environmental Practice" means 'the application of the most appropriate combination of measures' while "Best Available Technology" means 'the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for timing discharges', see Regulations 2 and 3 of Annex II.

factors.[122] These provisions have the potential of encouraging industry self-regulation in the technical aspects of offshore petroleum operation in view of the ever changing conditions of marine environment and the technical challenges they present to operators.

Annex VI contains specific undertaking to prevent and eliminate pollution from offshore activities through the application of the Annex II defined principles of Best Available Technology and Best Environmental Practice.[123] Parties are to take all measures and adhere to the provisions of Article 12 and Annex VI of the Convention to prevent pollution from exploration and exploitation of the seabed and its subsoil. Abandoned, disused offshore units and accidentally wrecked offshore units are to be completely removed and brought ashore. This obligation is a step further than the provisions of UNCLOS and Mediterranean Offshore Protocol which do not provide for mandatory total removal of abandoned offshore installations.

Co-operation is expected in combating marine pollution[124] "to conserve natural habitats and biological diversity and to protect ecological processes" to ensure the sustainable use of natural resources of the Baltic Sea.[125] Parties are expected to consult when a given project require by law an environmental impact assessment.[126] They shall notify other parties whose interests are affected or likely to be affected by an incident resulting in pollution of a transboundary scale.

The EU Directive on Offshore Safety adopted by the Parliament on 21 May 2013[127] and by Council on 10 June 2013[128] aims to "reduce as far as possible the occurrence of major accidents

[122] Annex II, Regulation 4.
[123] Id., Annex VI, Regulation 2
[124] See 1992 Helsinki Convention, Arts 13, 14, 15. It also provides for notification and consultations obligations in the event of an incident.
[125] Id., Art.15
[126] Id., Art. 7(1) and (2); see also Annex VI, Regulation 3 on environmental impact assessment and monitory for offshore activities
[127] Oil and Gas Journal, *European Parliament Approves Offshore Oil, Gas Safety Directive*, 21 May 2013 available at http://www.ogj.com/articles/2013/05/european-parliament-approves-offshore-oil--gas-safety-directive.html accessed on 12 June 2013
[128] See Upstream, *EU Ministers Sign off on Offshore Safety Law*, 10 June 2013, available at http://www.upstreamonline.com/live/article1329554.ece accessed on 12 June 2013

related to offshore oil and gas operations and to limit their consequences".[129] It is applicable to present and future installations and operations.[130] To achieve this objective it establishes a set of basic requirements that will help to prevent major accidents and limit its consequences in offshore oil and gas operations.[131] It acknowledges the importance and necessity to apply the preventive and polluter-pays principles.[132]

MODUs in transit are considered to be ship and subject to relevant provisions of SOLAS, MARPOL and their applicable construction codes.[133] Major accident prevention policy of operators should be applied also in operations outside Union waters subject to prevailing national legal framework.[134] This does not guarantee the application of EU standards outside EU waters as the prevailing national legal framework may not be in concord with the EU Directive. However, in what seems like a self-regulatory obligation, operators are expected to act proactively to ensure the highest level of safety.[135]

It urges global cooperation and affirms the Commission's commitment to promoting high safety standards of offshore operations at international level in relevant global and regional fora including Arctic.[136] Meanwhile, bearing in mind the lessons learnt from the US regulatory lapses leading to the Macondo blowout, the EU Directive calls for a mandatory separation of "regulatory functions relating to offshore safety and environment and regulatory functions relating to economic development, including licensing and revenues management."[137] Also,

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[129]EU Directive on Safety of Offshore Oil and Gas Operations 2013, Preamble, para. 2; see also *European Parliament Approves Offshore Oil, Gas Safety Directive*, available at http://www.ogj.com/articles/2013/05/european-parliament-approves-offshore-oil--gas-safety-directive.html accessed on 25 May 2013

[130] Council of the European Union, *Council adopts directive on safety of offshore oil and gas operations*, Luxembourg 10 June 2013, available at http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/trans/137424.pdf accessed 12 June 2013

[131] Id., Art.1

[132] Preamble, para.1

[133] Preamble, para.32

[134] Id.,para.36

[135] Id., para.37

[136] Art.33(3)

[137] See Council of the European Union, supra note 131

the EU appears not to be favourable toward prescriptive regulations of offshore oil and gas operation. It acknowledges that "best practices currently available for major accident prevention in offshore oil and gas operations are based on a goal-setting approach and on achieving desirable outcomes through thorough risk assessment and reliable management systems."[138] Member States are therefore to ensure that operators carry out offshore oil and gas operations on the basis of systematic risk management.[139]

2.6.2 Emergency Response

In the OSPAR regime, where transboundary pollution is envisaged in any circumstance, concerned parties are expected to consult and negotiate a cooperation agreement to contend with the transboundary nature of the pollution.[140] One negotiated cooperation agreement is the Bonn Agreement[141] which is applicable whenever there is grave and imminent danger of pollution of a transboundary nature.[142] The Agreement provides the mechanism for North Sea countries and the European Community to help each other in contending with pollution from maritime disasters and prolonged pollution from ships and offshore installations, and engages in surveillance as a method of detecting and combating pollution at sea.[143] However, it does not address liability in the event of transboundary marine pollution.

In the Barcelona Convention regime parties have obligation not to allow activities within their waters to cause transboundary pollution. In the event of an incident that poses threat of

[138] Id., Preamble, para. 25
[139] Id., Art.3(4)
[140] 1992 OSPAR, Art. 21.
[141] Bonn Agreement, available at http://www.bonnagreement.org/eng/html/welcome.html accessed on 25 May 2012
[142] Bonn Agreement, Art. 1
[143] See generally Arts. 3 – 9 of the Agreement

pollution of a transboundary nature, the party in whose territory the installation is located is to promptly notify other parties likely to be affected to enable them take appropriate measures.

In the event of an emergency, provisions of the Protocol for Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency[144] shall be applied mutatis mutandis. Operators are required to put in place Contingency Plans to combat accidental pollution. The coordination for the development and implementation of which shall be in accordance with the provisions of Annex VII of the Offshore Protocol.[145] Parties are to give mutual assistance in cases of emergency.[146] Article 15(2) of the Offshore Protocol is explicit on the responsibility and duty to respond adequately to emergency. It mandates Contracting Parties to ensure operators at all times have on installations adequate equipment and devices in good working order, not just to prevent accidental pollution but also facilitate prompt response to an emergency in line with the best available environmentally effective and economically appropriate techniques.

In the Baltic Sea region, Annex VII of the Helsinki Convention provides requirements for emergency response to pollution. Fundamentally, States are to maintain the ability to respond to incidents that could cause damage to marine environment within the region and beyond state jurisdiction. Parties must have national contingency planning and where appropriate, bilateral and multilateral plans for response to pollution incidents. There is also mandatory surveillance, response measures and assistance required of members when incidents within region waters call for such.[147] Parties are to cooperate on regular basis on ways of dealing with spillages,

[144] Barcelona Emergency Protocol (16 February 1976 and in force 12 February 1978) 15 ILM 300 (1976). This protocol was revised by the Protocol Concerning Cooperation in Preventing Pollution from Ship and in Cases of Emergency, Combating Pollution of the Mediterranean Sea adopted at Valetta on January 2002 (Now Prevention and Emergency Protocol), in force 17 March 2004
[145] 1994 Offshore Protocol, Art. 16
[146] Id., Art. 18
[147] Id., Annex VII, Regulations 1-8

information on research and development and on implementation and further development of the Convention.[148]

The EU Directive on Offshore Safety provides the expected EU standard for emergency response within a State and where there is threat of transboundary harm. The operations are to be guided by both internal and external emergency response policies. [149]

2.6.3 Liability and Compensation

There appears to be limited provisions in liability and compensation at regional levels. For example, the OSPAR Convention provides for the application of polluter pays principle but has no substantive provisions to address liability and compensation for accidental pollution from offshore petroleum operations.

The Barcelona Offshore Protocol requires licences to be supported by insurance or other financial security to cover liability relating to compensation for damage caused by offshore activities.[150] It provides for equal access to justice for victims of transboundary pollution in other states.[151] Each State is to formulate "appropriate rules and procedures for the determination of liability and compensation for damage".[152] In the absence of such appropriate rules and procedures liability shall be in line with the provisions of the protocol. In which case

[148] Id., Regulation 10; Parties are to also apply the principles and rules of the Manual on Co-operation in Combatting Marine Pollution, see Regulation 11.
[149] EU Directive on Offshore Safety, Arts. 28-33
[150] Id., Arts. 7 and 27(2)(b)
[151] Id., Art.26(4)
[152] Id., Art. 27(1); see also Art. 16 which requires parties to ensure that operators have a contingency plan fashioned in line with the Contracting state parties contingency plan established in accordance with the Protocol for Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency which they are expected to implement mutatis mutandis.

liability would be channelled to the operator to make adequate and prompt payment of compensation.[153]

Similarly, the EU Directive on Offshore Safety requires technical expertise and financial capability, including financial security to cover liability associated with offshore operations to be taken into consideration in the grant or transfer of licences.[154] States must also put in place "effective and proportionate penalties" for breach of regulations.[155] In the event of an accident, operators are to be held responsible even when the act or omission is that of a contractor.[156] However, for the avoidance of doubt, States are to decide on the responsible party (to be held liable) in the event of an accident before the commencement of offshore operations.[157]

Offshore licensees are to be financially held liable by States for prevention and remediation of environmental damage caused by offshore operations by, or on behalf of, the licensee or the operator.[158] Delegation of this responsibility is not to be allowed by member States.[159] In effect, the operator remains the responsible party for cost of precautionary measures and remediation. However, details on liability is still governed by Directive 2004/35/EC, subject to minor amendment that extended its application to all European waters, that is, up to the exclusive economic zones of member States.[160] The Directive creates avenue for revision and improvement of the liability regime for offshore operations as the Commission is to report to Council and Parliament on the availability of financial security instruments for offshore

[153] Id., Art. 27(2)(a)
[154] Art.4
[155] Id., para.56
[156] Art.3(2)
[157] Preamble, para.8. These provisions are aimed at addressing the legal uncertainties that arose as to who was to be held responsible as between the operator and contractors for the Macondo Blowout. The legal battles rages on as to whether (and to what extent) the contractors, Transocean and Halliburton should be held jointly and severally liable along with BP, the operator.
[158] Art.7
[159] Id., see also preamble, para.13
[160] EU Directive 2013/30/EU, Art.38; See also para.50 of the preamble and Art.3(1)(a) of Directive 2008/56/EC

operations and the handling of compensation claims. The report is to be accompanied by relevant proposals.[161]

Penalties in relation to all issues covered by the Directive are to be decided by individual countries that must implement them and ensure that they are "effective, proportionate and dissuasive".[162] These are all words and phrases with imprecise degrees for compliance. As such implementation by member States would be different. However, as a check on the efficacy of penalties, two years into the entry into force of the Directive, the Commission is expected to submit to the Council and Parliament, a report on its "assessment of the effectiveness of the liability regimes in the Union in respect of the damage caused by offshore oil and gas operations."[163] The commission will in the report evaluate the appropriateness of expanding liability provisions.[164]

2.7 Enforcement

States voluntarily enter into international agreement and they are expected to implement the terms of such agreement to achieve desired results. Some treaties have institutions or mechanism for their enforcement. In relation to protection of marine environment from offshore activities, Article 214 of UNCLOS provides that:

> "States shall enforce their laws and regulations adopted in accordance with article 208 and shall adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conference to prevent, reduce and control pollution of the

[161] EU Directive 2013/30/EU, Art.39(1)
[162] Art.34
[163] Art.39(2)
[164] Id.

marine environment arising from or in connection with seabed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction, pursuant to articles 60 and 80."[165]

The above provision discourages arbitrary measures in municipal laws by requiring that measures taken by coastal States be in accord with "applicable international rules and standards". But the determination of what these international standards are might be difficult. For instance, the "applicable international rules and standards" may include existing global and regional treaties on prevention and control of marine pollution. In addition, "applicable international rules and standards" would continually expand in scope with the addition of any new regulation that might be negotiated or adopted in line with States' obligation to develop international rules and standards.[166] According to some commentators, the scope of Article 214 in relation to artificial islands, installations and structures under the jurisdiction of coastal States is, by its reference to Articles 60 and 80, wider than its title suggests.[167] Article 80 deals with artifices on the continental shelf and thus is concerned with seabed activities under the jurisdiction of the coastal State. But Article 60 deals with artifices in the EEZ where coastal States have exclusive rights of construction, regulation, operation of artificial islands and installations for a wide range of economic purposes without restrictions.[168]

At regional level, OSPAR Commission established by Article 10 of the Convention has the responsibility to assess the effectiveness of the measure contained in the convention. It shall

[165] Article 60 deals with artificial islands, installations and structures in the exclusive economic zone while Art. 80 is concerned with artificial islands, installations and structures on the continental shelf. And contrary to the requirement for total removal of disused installation and structures under Article 5(5) of the 1958 Convention on the Continental Shelf, UNCLOS does not insist on total removal under Article 60(3)

[166] Klein, supra note 81, p.159. This uncertainty as to what constitutes "applicable international rules and standards" played out in the Mox Plant Case. In the case, Ireland urged the ITLOS to consider provisions of 'non-UNCLOS' instruments as an aid to interpretation of UNCLOS articles but the argument was opposed by England, see MOX Plant, Day 2 Transcript, p.40 cited in Klein, supra note 81, p.150

[167] See Nordquist, Myron H., supra note 90, p.115

[168] Vinogradov, S. V. and Wagner, J. P., 'International Legal regime for the Protection of the Marine Environment against Operational Pollution from Offshore Petroleum Activities' in *Environmental Regulation of Oil and Gas*, Zhiguo Gao (ed.), (Kluwer Law International) 93, 101 1998

assess compliance by parties to the convention, decisions and recommendations and promote the implementation of recommendations, including measures to assist a Contracting Party to carry out its obligations.[169] It is vested with powers to adopt decisions and recommendations in accordance with Article 13. In case of transboundary pollution the Commission may assist parties by making recommendations with a view to reaching a satisfactory solution. However, implementation of safety standards seems to be the responsibility of each State that authorises such activities. Similarly, in the Baltic Sea the Helsinki Commission (HELCOM) oversees the implementation of the Helsinki Convention. The EU Directive on Safety of Offshore Operations provides reporting obligations while the European Commissions is expected to monitor the implementation of the Directive. An example is the requirement for the Commission to submit to the Council and Parliament, a report on its assessment of the effectiveness of liability regimes in the Union [170] and evaluate the appropriateness of expanding liability provisions.[171]

2.8 "Soft Law" Regulation of Accidental Pollution from Offshore Operations

In addition to binding treaties there are "soft law" instruments that influence the conduct of offshore operators. They are persuasive and gradually sway the content of binding instruments. Some "soft law" instruments relevant to offshore oil and gas operations are the Stockholm Declaration, Rio Declaration, Agenda 21, UNEP Environmental Law Guidelines and Principles 'Offshore Mining and Drilling',[172] 2007 World Bank Environment, Health, and Safety Guidelines for Offshore Oil and Gas Development of the World Bank (World Bank

[169] 1992 OSPAR, Arts. 21 and 23
[170] Art.39(2)
[171] Id.
[172] Decision 10/14/VI of the Governing Council of UNEP, 31 May 1982; see Vinogradov, S. V. and Wagner, J. P., supra note 168, p.113

HSE Guidelines). Also important are guidelines and standards by professional institutions like the API.

2.8.1 1972 Stockholm Declaration on the Human Environment

The Stockholm Declaration calls on States to "take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."[173] More importantly, they must in the exploitation of their resources avoid any form of environmental damage to other States' territories or areas beyond the limits of national jurisdiction.[174] The issue is, who is the victim and has locus standing to sue when the high sea is polluted by activities within a State? The absence of international liability regime is noted as declaration is made urging States to cooperate to develop international law of liability and compensation for victims of transboundary pollution.[175]

2.8.2 1992 Rio Declaration on Environment and Development

Rio Declaration acknowledged various principles of environmental law like inter-generational and intra-generational equity,[176] common but differentiated responsibility,[177] and sustainable

[173] 1972 Stockholm Declaration , Principle 7
[174] 1972 Stockholm Declaration, Principle 21; the high sea is an area beyond limits of national jurisdiction. Therefore, as oil and gas exploration goes miles away from shore into deep waters, states must be mindful of incident that are likely to damage the waters of the high seas and take steps to prevent it.
[175] 1972 Stockholm Declaration, Principle 22; see also Principle 24 which underscores the importance of international cooperation at all levels.
[176] Id., Principle 3
[177] Id., Principle 7

development.[178] Furthermore, the application of the precautionary principle and polluter- pays principles in the protection of the environmental was underscored.[179]

The Rio Declaration renewed the call on States to develop national law regarding liability and compensation for the victims of pollution and other environmental damage. It calls for cooperation and more determined effort to develop further international law on liability and compensation for environmental damage caused by activities within State jurisdiction or control to areas beyond State jurisdiction.[180] This is in addition to a confirmation of the sovereign right of nations to exploit resources within their territories in accordance with their own environmental and developmental policies save to avoid transboundary pollution.[181]

A related conference, Rio+20 in 2012, failed to adopt a new major international agreement. Though it made a statement of recognition that "oceans, seas and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical to sustaining it, and that international law, as reflected in UNCLOS, provides the legal framework for the conservation and sustainable use of the oceans and their resources."[182]

2.8.3 Agenda 21[183]

Agenda 21 was adopted at the 1992 Earth Summit as a blue print and action plan for sustainable development by addressing the current problems and preparing the world for the challenges of the 21st Century in various issues such as social, economic and environment.[184]

[178] Id., Principles 4 & 5
[179] Id., Principles 15 &16
[180] Rio Declaration, Principle 13
[181] Id., Principle 2
[182] Rio + 20 , Clause 158
[183] UNCED Report, A/CONF.151/26/Rev.1 (Vol.1) (1993)
[184] United Nations, Earth Summit available at http://www.un.org/geninfo/bp/envirp2.html last visited 24 April 2015

Agenda 21 urges States to avoid degradation of the marine environment through the application of preventive, precautionary and anticipatory approaches in addition to impact assessment of major activities with potential environmental impacts. The application of the polluter pays principle as a means of discouraging environmental degradation was also advocated.[185]

In relation to offshore oil and gas operations, Agenda 21 advocated individual, sub-regional, regional and global assessment of "the need for additional measures to address degradation of the marine environment from offshore oil and gas platforms, by assessing existing regulatory measures to address discharges, emissions and safety and assessing the need for additional measures."[186] It further emphasised the need to train both regulatory staff and oil-and-chemical-spill response personnel.[187] There was no direct mention of accidental pollution from offshore petroleum operations. But an assessment of existing safety measures in the present circumstances implies focusing on prevention of major hazards in offshore operations and their management.

2.8.4 UNEP Environmental Law Guidelines and Principles 'Offshore Mining and Drilling'

Following a 1977 study of the legal aspects of offshore mining and drilling and its impact on the environment, UNEP commissioned a Working Group of Experts on Environmental Law to prepare a report. The Group of Experts' report was endorsed by UNEP Governing Council on 31 May 1982 and known as the UNEP Environmental Law Guidelines and Principles 'Offshore Mining and Drilling'.[188] The Guidelines, according to the UN General Assembly, provides

[185] Paras.17.21 and 17.22(a), (b)& (c)
[186] Para.17.30
[187] Para.17.38
[188] Decision 10/14/VI of the Governing Council of UNEP, 31 May 1982; see Vinogradov, S. V. and Wagner, J. P., supra note 168, p.113

general direction for States to adhere to in their formulation of national legislation or negotiation of international agreements.[189]

The general obligation of the Guidelines as provided in Conclusion 1 is focused on prevention of pollution by urging States "to take preventive measures against, limit, and in so far as possible reduce pollution and other adverse effects on the environment resulting from offshore exploration and exploitation of hydrocarbons… and other related activities, within the limits of national jurisdiction". It contains relatively detailed provisions on safety of offshore operations as States are to ensure that proper safety measures are taken in design, construction, placement, equipment and maintenance of offshore installations.

The Guidelines require national laws on offshore operations not to be "less effective than international rules, standards and recommended practice and procedure". It calls for harmonisation of municipal laws and regulations adopted by States, in particular at the regional level, "taking into account the best available standards and technology".[190] It also provides for exchange of information and technology transfer.

Other provisions are authorisation of offshore operation, safety measures, contingency planning and implementation measures and liability and compensation. Offshore operation are to be subjected to prior authorisation that is based or dependent on an assessment of environmental effects.

The guidelines are not binding but provide basis for subsequent instrument related to offshore operations.[191]

[189] United Nations General Assembly Resolution 37/217 of 20 December 1982
[190] UNEP Environmental Law Guidelines and Principles No. 4'Offshore Mining and Drilling', Conclusion 2(1) and (2)
[191] See Vinogradov, S. V. and Wagner, J. P., supra note 168, p.115

2.8.5 World Bank Environment, Health, and Safety Guidelines for Offshore Oil and Gas Development 2007

The World Bank provides finance and technical assistance to developing countries. Most finances are given to countries for specific projects which are monitored to ensure they are in line with the terms of the loan agreements. The entities that execute the projects must meet the standards set by the bank and follow its guidelines, especially health safety and environment guidelines. These guidelines usually contain good international practices. In view of the spread of World Bank projects across the world its guidelines influence business conducts and set standards.

The 2007 World Bank Environment, Health, and Safety Guidelines for Offshore Oil and Gas Development of the World Bank (World Bank HSE Guidelines) forms part of 'technical reference documents with 'general and industry specific examples of Good International Industry Practice (GIIP).[192] The HSE Guidelines contain performance levels and measures generally considered to be achievable in new facilities by existing technology at reasonable costs.[193] The Guidelines include information relevant to seismic exploration, exploratory and production drilling, development and production activities, offshore pipeline operations, offshore transportation, tanker loading and unloading, ancillary and support operations, and decommissioning'.[194]

The Guidelines identified air emissions, wastewater discharges, solid and liquid waste management, noise generation and spills as potential environmental issues associated with

[192] Defined as the exercise of professional skill, diligence, prudence and foresight that would be reasonably expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally. The circumstances that skilled and experienced professionals may find when evaluating the range of pollution prevention and control techniques available to a project may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity as well as varying levels of financial and technical feasibility

[193] 2007 World Bank HSE Guidelines, p.1

[194] Id.

offshore oil and gas development.[195] It provides for measures necessary to prevent spill and emphasises the need for Spill Response Plans.[196] It addresses occupational health and safety issues like well blowout.[197] But liability and compensation were not addressed in the guidelines. These guidelines are persuasive, especially to entities and countries engaged in World Bank sponsored projects. Moreover, they have the potential for indirect application to developing countries of requirement for EIA and other standards in Conventions to which they are not party to as condition of International Finance Corporation (IFC) or other international project financing.

2.8.6 Guidelines and Standards by Professional Institutes

In addition to binding and non-binding international legal instruments that regulate offshore petroleum operations, there are recommended practices, guidelines and standards provided by private institutions. These standards are seen as good oil field practice that operators in the industry are expected to use in their activities. They influence safety and technical operations in the industry.

These are Guidelines for the Conduct of Offshore Drilling Hazard Site Surveys 2013[198] adopted by the International Association of Oil and Gas Producers (IAOGP). The American Petroleum Institute (API) also have recommended guidelines and practices relating to Planning, Designing, and Constructing Fixed Offshore Platforms Working Stress Design,[199] Seismic Design Procedures and Criteria for Offshore Structures,[200] Structural Integrity Management of

[195] See 2007 World Bank HSE Guidelines, Clause 1.1
[196] Id., Section 1.1, pp10-11
[197] Id., Section 1.2
[198] Report No. 373-18-1,Version 1.2, April 2013
[199] API Recommended Practice 2A-WSD, 22nd ed. November 2014
[200] ANSI/API Recommended Practice 2EQ/ISO 19901-2, 1st ed. November 2014

Fixed Offshore Structures,[201] *D*eepwater Well Design Considerations,[202] Well Construction Interface Document,[203] Cementing, Isolation and Barriers,[204] and Practices for Blowout Prevention Equipment Systems for Drilling Wells.[205] These guidelines, practices and standards influence industry practice and are in some cases incorporated into national legislation.[206]

2.9 Conclusion

There are various binding international norms and regulations on offshore oil and gas E&P, especially at the regional level. The principal concern is the adequacy of these regulations. Beyond the framework provided by UNCLOS at the global level there are few detailed provisions on requirements for prevention, emergency response and liability and compensation. UNCLOS provides guide to regions on the adoption of regional agreements and States in their formulation of domestic regimes on offshore oil and gas operations.

However, there is no designated international organisation to ensure the development of rules and regulations governing offshore petroleum E&P the way the IMO does for shipping. Therefore, regions and States exercise a lot of discretion in the regulation of their offshore petroleum industries. The result being that while some regions have adopted instruments covering offshore petroleum operations others have no such regulations. The different concerns and focus of various regions and nations also affect the content of regional instruments and national regulations. What is obviously absent at the global level is detailed instrument on

[201] API Recommended Practice 2SIM, 1st ed. November 2014
[202] API Recommended Practice 96
[203] API Bulletin 97
[204] API Recommended Practice 95-2
[205] API Standards 53
[206] See Deepwater: the Gulf Oil Disaster and the Future of Offshore Drilling-Report to the President (National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling), p.225 (January 2011); Section 362 Nigerian Petroleum Industry Bill (PIB) 2012 which interprets "good oilfield practice" to mean, inter alia, "knowledge of and compliance with the latest standards developed by relevant professional institutions" like API, the British Standard Institute (BSI) and the International Organisation for Standardisation (ISO)

prevention of accidental pollution, liability and compensation for accidental pollution. Issues such as the responsible party and breach of safety regulations; liability and compensation for accidental pollution; locus standing to sue and equal access to justice especially in cases of transboundary pollution are not clearly defined in some regions and at the global level.

The OPRC contains broad provisions on emergency response but may need more details for better implementation and response to the magnitude of damage a major hazard in offshore installation may cause. The detailed analysis and recommendation would be expounded later in chapter five.

In addition to global frameworks the regional regimes address accidental pollution from offshore petroleum operations but deal with different aspects in varying degrees. The 2013 EU Directive on offshore safety provides more comprehensive provisions on safety and prevention of accidental pollution and emergency response. The extent to which the directive would influence regional conventions and municipal laws of EU member States is reviewed in subsequent chapters. While the Directive offers EU's commitment to safety of offshore operations globally it remains binding only within the EU. The need for offshore safety to prevent major hazards globally remains unguaranteed by international law.

The EU is also commitment to promoting high safety standards of offshore operations including the Arctic in relevant global and regional fora and call for global cooperation.[207] The Arctic has very challenging environment characterised by ice most part of the year, low temperature, lack of existing communication, logistical and information infrastructure, low visibility and hours of daylight. There is lack of access to expert help and knowledge of its geology is limited.[208] These environmental and infrastructural challenges are not only a concern

[207] Art.33(3)
[208] National Academy of Sciences, '*Responding to Oil Spills in the U.S. Arctic Marine Environment'* (the National Academies Press) pp.1-12 (2014)

for exploration but also a problem for emergency response in the event of a spill.[209] The EU commitment is a welcome development in view of the absence of binding international regulation of petroleum activities in the arctic offshore. The countries bordering the Arctic are not of one region or continent. Therefore, in addition to the Arctic Council,[210] a broader than regional approach would be ideal in building consensus on issues of safety and accident prevention, emergency response, and liability and compensation. Considering the special nature of Arctic environment, actions in this regard would contribute to achieving sustainable protection of the global marine environment.

The international legal framework is complemented by other non-binding rules and standards set by international organisations like UNEP, World Bank, IMO and UN Conferences on the environment. But these non-binding instruments, though persuasive, cannot be part of 'applicable international rules and standards' obligatory on States to implement in addressing accidental pollution from offshore petroleum operations. However, instruments such as the Stockholm and Rio declarations have influenced the content and interpretation of many environmental multilateral agreements. Private professional institutions also provide guidelines and standards as good oil field practices to improve safety and technical operations to prevent accidents.

The various legal regimes and their adequacy in terms of accident prevention, emergency response and liability and compensation in a post Macondo era would be examined in chapters four, five and six.

[209] Id., p.28

[210] The Arctic Council is an intergovernmental forum promoting cooperation, coordination and interaction among the Arctic States on issues such as environmental protection and sustainable development. The Member States are Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, Russian Federation, Sweden, and the United States of America; see 1996 Declaration on the Establishment of the Arctic Council (1996 Ottawa Declaration), Clauses 1 and 2

CHAPTER THREE

TECHNICAL AND ENVIRONMENTAL ASPECTS OF OFFSHORE PETROLEUM OPERATIONS

3.0 Introduction

Offshore petroleum exploration and production has been acknowledged by both industry operators and regulators as a technologically challenging activity involving high risks. Operational and environmental challenges underpin the notion of a possibility of accidents and pollution. Hence, it requires good safety practice, the best of technological expertise and financial capacity to engage in and respond to the negative consequences of any eventuality.

This chapter looks at the technical aspects of offshore petroleum E&P, challenging sea conditions and installations used in the operations. Also, it highlights the environmental impact of operational discharges and accidental pollution of petroleum activities.

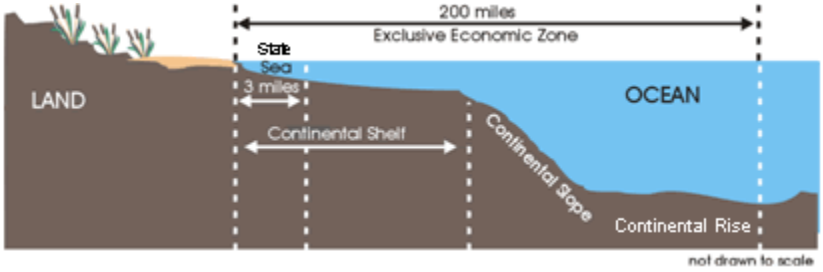
3.1 The Offshore Petroleum Environment

Offshore oil and gas operations[1] take place within the continental margins of coastal States. These are areas of the sea bed that are contiguous to and lying seaward of the baseline. According to the European Union 'offshore' is "situated in the territorial sea, the Exclusive Economic Zone or the continental shelf of a Member State within the meaning of the United

[1] By EU legal regime a reference to 'offshore oil and gas operations' would mean "all activities associated with an installation or connected infrastructure, including design, planning, construction, operation and decommissioning thereof, relating to exploration and production of oil or gas, but excluding conveyance of oil and gas from one coast to another", see Article 2(3) of EU Directive 2013/30/EU on offshore safety; but this thesis is focused on accidental pollution at the operational stage.

Nations Convention on the Law of the Sea".[2] The continental margin comprises of three portions, that is, the continental shelf,[3] the continental slope and the continental rise which inclines seaward from the base of the continental slope. See (Figure 1).[4]

Figure 1: Continental Shelf and Slope



Source: Energy Information Administration

Offshore operations are carried out at various depths. Initial exploration and exploitation of petroleum offshore was done in shallow waters.[5] Following advancement in technology, offshore exploitation and production (E&P) moved to deep waters with depths of over 1,000 feet and ultra-deep waters of 10,000 feet.[6] Deep and ultra-deep waters have extreme climatic

[2] See EU Directive 2013/30/EU on Offshore Safety, Art. 2(2)

[3] UNCLOS, Art.66 provides that "The continental shelf of a coastal State comprises the sea-bed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baseline from which the breath of the continental margin does not extend up to that distance." This definition is different from the definition given by the 1958 Continental Shelf Convention where it was described in terms of water depth and exploitability. For full commentary on the extent of the continental shelf under the UNCLOS see Centre For Ocean Law and Policy, *United Nations Convention on the Law of the Sea 1982: A Commentary*, Vol. II, Nordquist (ed.) (Martinus Nijhoff Publishers) 825-890 (1993)

[4] Energy Information Administration, 'Overview of U.S. Legislation and Regulations Affecting Offshore Natural Gas and Oil Activity', Office of Oil and Gas, p.2 (September 2005)

[5] Like the 1896 well drilled at Summerland Field in the Santa Barbara Channel in California, see Deepwater Horizon Commission Report to the President. The first commercial offshore oil well drilled by a mobile rig off the coast of South eastern Louisiana by Mobil in 1947 was in water depth of 14 feet, *History of the Offshore Industry*, available at http://www.offshore-mag.com/index/about-us/history-of-offshore.html last visited on 5 April 2013. Though there are other sources that state 1937 as the year of Mobil well and records that Kerr-McGee's (Anadarko Petroleum) well of 1947 drilled at their Vermilion platform the first oil discovery drilled out of sight of land, see *Offshore Drilling* at http://en.wikipedia.org/wiki/Offshore_drilling

[6] The depth of water where one of the deepest offshore oil well was drilled in 2009 by the ill-fated Deepwater Horizon in the Tiber Oil Field at Keathley Canyon block 102, 250 miles Southeast of Houston was 1,259m (4,132 feet). The well has a vertical depth of 35,050 feet (10,683m) and measured depth of 35,055 feet (10,685m). See *BP Makes Giant Deep Water Discovery at Tiber* available at

conditions that may complicate the control of subsea installations, response to emergency and major accident.[7] The velocity of the wind is usually high while the waves or tidal swings could be as high as 30 feet and beyond.[8] These conditions are believed to be critical as explained by the US National Academies:

> "Offshore drilling, especially in deep water, is an inherently hazardous activity. Construction of deepwater wells like Macondo is a complex process. Sophisticated equipment is used, such as the *Deepwater Horizon* drilling rig, which must operate in a highly coordinated manner in areas of uncertain geology, often under challenging environmental conditions, and subject to failures from a variety of sources including those induced by human and organizational errors."[9]

The Arctic offshore present its own complex environmental challenges. It has limited day light, ice, low temperature, permafrost, limited knowledge of its geology, absence of supporting facility and infrastructure, sparse or limited bathymetric information, remoteness and lack of access to expert help, remoteness, isolation and human factors.[10]

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http://www.rigzone.com/news/article.asp?a_id=79913 last visited on 11 March 2013; the ill-fated Macondo well was being drilled in water depths of about 5,000 feet.

[7] Communication from the Commission to the European Parliament and the Council: Facing the Challenge of the Safety of Offshore Oil and Gas Activities {SEC(2010) 1193 final} COM(2010) 560 final, p.3

[8] Oregon State University, *Maximum Height of Extreme Waves up Dramatically in Pacific Northwest*, Online at http://oregonstate.edu/ua/ncs/archives/2010/jan/maximum-height-extreme-waves-dramatically-pacific-northwest accessed on 8 April 2013; The waves in the location of the Piper Alpha were over 40 feet, see Read, Colin, *BP and the Macondo Spill: The Complete Story*, (Palgrave Macmillan) p. 76 (2011); Hurricane in the Gulf of Mexico could produce winds of 150 mph and waves as high as 75 feet and above, see Shell: *Oil and Gas Offshore Production*, p.3, available at http://www-static.shell.com/content/dam/shell/static/usa/downloads/alaska/os101-ch3.pdf accessed 21 February 2013

[9] Committee on Analysis of Causes of the Deepwater, Horizon Explosion, Fire, and Oil Spill to Identify Measures to Prevent Similar Accidents in the Future; National Academy of Engineering and National Research Council Report, *Macondo Well-Deepwater Horizon Blowout: Lessons for Improving Offshore Drilling Safety*, (National Academies Press) p.3 2012, hereafter (NAENRC Deepwater Horizon Report 2012), available at http://www.nap.edu/catalog.php?record_id=13273 last visited on 25 March 2013

[10] Arctic Council, Emergency Prevention, Preparedness And Response (EPPR) Working Group Doc. ACSAO-SE03, Doc. 4.1, November 2012: Final Draft of Recommended Practices for Arctic Oil Spill Prevention (The RP3 Project), para 3.4 (Hereafter Arctic Council RP3 Project)

Exploration offshore begins with seismic data collection to detect the type of "subsurface configuration" where oil and gas are found.[11] This stage of exploration is accompanied by significant physical presence that causes ground vibration which brings with it environmental impacts such as visibility and clearance, acoustic emission, accidental spills and pollution of water and land.[12]

Positive seismic and geological surveys are followed by exploration and appraisal phases which in most cases encompass the drilling of appraisal wells to determine the commercial viability of the reservoir. Considerable physical presence stems from drilling mud dumps, drill cuttings discharge, atmospheric emissions from machinery, accidental spills (small and major), blowouts, waste disposal and noise. These problems interfere with fishing and shipping and cause marine pollution with impacts on fish stocks, sea plants, birds, sea mammals and nuisance for coastal businesses and its inhabitants.[13]

Also, the possibility of an accident, if operations are not properly managed and executed, is very high at this stage.

3.2 Offshore Platforms and Rigs Used for Exploration and Exploitation of Petroleum

Offshore platforms provide facilities and equipment required for E&P of oil and gas in the marine environment.[14] With increased search for petroleum in deep and ultra-deep waters the

[11] See *Furor over Offshore Drilling*, 2 EPA J. 2, at 3 (1976)
[12] Zhiguo Gao (ed.), *Environmental Regulation of Oil and Gas*, (Kluwer Law International 1998)
[13] Id at p.5
[14] see Morten Holmager, (ed.), *Offshore Book: An Introduction to the offshore Industry* (Offshore Centre Denmark) p.39 2010, on line at http://www.offshorecenter.dk/log/bibliotek/OffshoreBook2010.pdf accessed on 19 February, 2013 (hereafter Offshore Book)

technology for design and construction of deep and ultra-deep ocean compliant structures keeps evolving.[15]

In order to address the dynamics and challenge of structural fatigue, the design of offshore structures take into account maximum load occurrence frequencies over a period of time, water depth and wave and weather scenarios to achieve a maximum level of safety. Some of these installations are gravity islands, steel jacket, jack-up platforms, gravity base structures, star platforms, complaint towers, tension leg platforms, semi-submersibles, spars, floating production storage and offloading units (FPSOs), mobile offshore drilling units (MODUs), subsea production systems and ice resistant rigs.

Sea conditions and water depth influence the type of installation used. For instance, gravity islands may be used in water depths of up to 50 feet year-round and are commonly used in the Arctic regions[16] while steel jacket platforms which are usually intended for long-term are ordinarily used in shallow to medium water depth areas of the sea. Also, jack-up rigs are used mainly in relatively low water depths.[17]

Tension Leg Platforms can be used in up to 6,000 feet of water and could serve as utility, satellite or early production platforms in large deep water sites.[18] MODUs are used for exploration wells and subsea production wells like the ill-fated Deepwater Horizon in BP's Macondo field. Similarly, FPSOs can operate in water depths up to 10,000 feet. With the

[15] Id; According to the Offshore Book, following the rise in oil prices in the 70s and again from 2005, the development of oil from offshore has been systematically encouraged to enable nations attain self-sufficiency. In addition, population growth and increased worldwide demand for energy has encouraged the offshore venture.
[16] Shell: *Oil and Gas Offshore Production*, supra note 8, p.3
[17] Offshore Book, note supra 14, pp.29 and 43
[18] Offshore Book, supra note 14, p.42

gradual increase in investment towards drilling in the Arctic, ice resistant drilling rigs are used to advance drilling operations in the Arctic region.[19]

3.3 Environmental Aspects of Offshore Operations

Environmental impact resulting from production of oil and gas offshore has been of special concern[20] as the extraction of oil and gas from subsurface deposits modifies the physical environment.[21] The two circumstances in which the marine environment is impacted by offshore petroleum operation are operational pollution and accidental pollution. However, not all oil components in the sea come from operational or accidental pollution of offshore petroleum operations. Some have seeped naturally for thousand and more years but assimilated into the marine environment without problems.[22]

3.3.1 Operational Pollution

Operational pollution is a result of discharges associated with the normal day to day operations of offshore oil and gas exploration and exploitation. These operational discharges vary both in types and quantity with various levels of harm to the environment.[23] The polluting substances

[19] An impressive drillship for possible use in the Arctic is the Stena Drillmax Ice constructed at the cost of $1.3billion. See Upstream Technology, Quarter 1, 2013, p. 23 available at http://www.upstreamonline.com/upstreamtechnology/ last visited 17 February 2013. GustoMSC, one of the most active designers of drilling rigs for arctic regions is working on turrent-moored drillship and a jack-up for operation in ice, p.23

[20] Wilder, Robert J., 'Cooperative Governance, Environmental Policy, and Management of Offshore Oil and Gas in the United States' in *Ocean Development and International Law*, Vol 24, p.41 at p.42

[21] Committee on The Cumulative Environmental effects of Oil and Gas Activities on Alaska's Slope North Slope, National Research Council, *Cumulative Environmental Effects of Oil and Gas Activities on the Alaska's North Slope* (The National Academies press)(2003) p.64

[22] See Brubaker, Douglas, *Marine Pollution and International Law: Principles and Practice* (Belhaven Press: London and Paris) p.12 1993

[23] Vinogradov, S. V. and Wagner, J. P., Combating Operational Pollution from Offshore Petroleum Activities, CEPMLP Paper CP 1/97 p.5; see also, Vinogradov, S. V. and Wagner, J. P., 'International Legal regime for the

include both chemicals and by-products of well drilling and discharges during production. At least 25 chemicals are used in offshore oil and gas exploration and exploitation.[24] Though these chemicals are widely used, control measures should be put in place to regulate their use and disposal to minimize their impact on marine environment. A good example of such regulation can be found in the region covered by OSPAR.[25]

Discharges during exploration are composed of drilling fluids (or drilling muds) which are essential elements of drilling technology and in most cases are accompanied by hydrocarbons and surface active chemicals that make the fluid very toxic.[26] There are two basic forms of drilling muds; the oil based mud and the water based mud. Though water based mud (WBM) is commonly used in offshore drilling as it is considered much friendly to the marine environment,[27] sometimes oil-based mud (OBM) or synthetic-based mud (SBM) is used when drilling conditions become more difficult and the use of water based mud become inappropriate. The type of mud used is usually determined by economics as well as by the

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Protection of the Marine Environment against Operational Pollution from Offshore Petroleum Activities' in *Environmental Regulation of Oil and Gas*, Zhiguo Gao (ed.), (Kluwer Law International) 93 1998

[24] OffshoreBook, supra note 14, p.34. These are Acidity control, Drag reducing agent, Antifoam, Dye, Asphaltene dissolver, Flocculant, Asphaltene inhibitor, Gas hydrate inhibitor, Biocide, Hydraulic fluid, Carrier solvent, Hydrogen sulphide scavenger, Coagulant Oxygen scavenger, Coolant, Scale dissolver, Corrosion inhibitor, Scale inhibitor, Demulsifier, Water clarifier, Deoiler, Wax dissolver, Detergent/cleaning fluid, Wax inhibitor and Dispersant.

[25] OSPAR regulatory measures are contained in OSPAR Decision 2000/2 on a Harmonised Mandatory Control System for the Use and Reduction of the Discharge of Offshore Chemicals (as amended), OSPAR Recommendation 2000/4 on a Harmonised Pre-Screening Scheme for Offshore Chemicals (as amended) and OSPAR Recommendation 2000/5 on a Harmonised Offshore Chemical Notification Format (HOCNF) (as amended)

[26] Wilder, Robert J., supra note 19, p.42; In the North East seas covered by OSPAR Commission discharge of drilling mud has been banned. Studies done by Norway indicate that in some cases the impacts from the discharge of drilling mud were severe while in some other areas levels of potential contaminants and areas of impact have decreased substantially since the cessation of discharges in 1996, see OSPAR Commission: Assessment of Impacts of Offshore Oil and Gas Activities in the North-East Atlantic (2009) p.22, available on line at http://qsr2010.ospar.org/media/assessments/p00453_OA3-BA5_ASSESSMENT.pdf accessed on 19 February, 2013 (hereafter OSPAR Commission Report 2009).

[27] In confirmation of that difference the OSPAR Commission Report 2009, supra note 20, p.24 states that "the Ekofisk region (monitoring region A) is a mature area with a decreasing trend in area contaminated by barium and area of disturbed fauna. This is due to the change from oil-based to water-based drilling fluids following OSPAR Decision 2000/3 on the Use of Organic-Phase Drilling Fluids (OPF) and the Discharge of OPF-contaminated Cuttings and reduced oil and gas activities in the area. The monitoring region B in the Norwegian Sea from 64 – 66 degrees north is a more recently developed area with increasing area contaminated with barium from water based drilling fluids and THC from oil production."

effect it will have on the environment. Though OBM costs much more per unit than WBM,[28] the long term economic cost of OBM far outweighs that of WBM. But all discharges of OBM can be hazardous due to their persistence in the marine environment and low bio-degradation level.

Closely linked to drilling mud is drill cuttings[29] which are usually contaminated by chemicals associated with drilling muds. Though the impact of these cuttings is localised and temporary, it may in combination with water based drilling mud cause a bit of smothering in areas in the vicinity of the well.[30] Another element of operational pollution is produced water which contains some level of crude oil constituents, organic chemicals, natural and added salts, solids and heavy metals.[31] Produced water at varying degrees of salinity is discharged into the ocean in the course of offshore operations.[32] Produced water is of major concern to the OSPAR Commission as most oil entering the marine environment during E&P is through produced water.[33]

There are other forms of discharges like well-completion and work-over fluids, cement residues, produced sand, deck drainage, blow-out preventer (BOP) fluid, gas and oil processing wastes, slop oil sanitary and domestic wastes. Most of the sewage and garbage originating from offshore installations contain high concentration of suspended solids which may not be too

[28] Evans, Shelley M., 'Control of Marine Pollution Generated by Offshore Oil and Gas Exploration and Exploitation: The Scotian Shelf', 10 Marine Policy, No.4, (1986) p. 261. OBM, according to Shelley, is a much more efficient lubricant which results in substantially reduced drilling time. The author also stated that in an experimental exploration well on the Scotian Shelf, $200,000 was saved by recycling the AOBM and the reduced number of drilling days saved $3 million.

[29] Drill cuttings are made of crushed rock and clay.

[30] Davies, J.M. and Kingston, P.F., 'Sources of Environmental disturbance Associated with Offshore Oil and Gas Developments' in William J. Cairns (ed.), *North Sea Oil and the Environment: Developing Oil and Gas Resources, Environmental Impacts and Responses*, (Essex: Elsevier Science Publishers Ltd.)p.428 1992

[31] Evans, Shelley M., supra note 28, p.263; see also OSPAR Commission Report 2009, note 26, p.14 which explains that "Produced water is the water found in reservoirs along with the oil or gas. When the oil or gas is extracted, produced water is associated with it. Entrained within the water there are hydrocarbons that are, as far as possible, removed from the water prior to any discharge."

[32] OSPAR Commission Report 2009, supra note 26, p.27; It also states that within the OSPAR Region "Environmental monitoring of the physical impacts arising by the placing a structure on the seabed is undertaken on a case by case basis depending on the particular sensitivities associated in the area."- See p.19

[33] OSPAR Commission Report 2009, supra note 26, p.13

damaging to the environment if discharged in reasonable quantities as they are usually degradable.[34]

There is also the menace of atmospheric emissions from venting and flaring of gas.[35] Most of these pollutants are non-degradable, with domestic wastes being the only exception.[36] The consistent presence of the non-degradable toxic chemicals in the marine environment could in some cases last for many generations of marine plant and animal life.[37]

While land-based activities and shipping may contribute more to marine pollution than offshore petroleum operations, the latter's ability to pollute the marine environment is also high. With increase in offshore E&P of petroleum, these activities would in years to come be significant source of marine pollution, especially, when current offshore fields become spent and much more water is injected to sustain pressure in the reservoir. The process will possibly result in increased produced water.[38] This is of great concern as most of these offshore installations are located in biologically productive parts of the ocean with fragile and sensitive ecosystems that harbour significant fisheries.[39]

In addition to pollution of the marine environment, offshore installations constitute navigational hindrances when linked with pipelines that can get ruptured in the course of

[34] Gavouneli, M., *Pollution From Offshore Installations*, International Environmental Law & Policy Series (Graham & Trotman/martinus Nijhoff) p.35 (1995)
[35] OSPAR Commission Report 2009, p13; GESAMP (IMO/FAO/UNESCO/WMO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Pollution, *Impact of Oil and Related Chemicals and waste on the Marine Environment*, GESAMP Reports and Studies No. 50, at 102-103 (1993); see also Gavouneli, Maria, supra note 34, at p.35
[36] Gavouneli, Maria, supra note 34, p.35
[37] Id; Neff and Anderson, 'Response of Marine Animals to Petroleum and Specific Petroleum Hydrocarbons' in Clark and Cole (eds.), *The Long-term Effects of Oil Pollution on Marine Populations, Communities and Ecosystems*, (London) 1981
[38] Vinogradov and Wagner, supra note 23 at p.6; The E & P Forum, *North Sea Produced Water: Fate and Effects in the Marine Environment*, Report No. 2.62/204, London p.13 (1994)
[39] Vinogradov and Wagner, supra note 23 at p.3

navigation in coastal waters and impact negatively on marine life and economic activities in varying ways.[40]

Apart from oil and chemicals, noise generated in the process is also a major environmental concern in offshore operations.[41] The effects of noise in offshore environment vary depending on the sensitivity of the organisms concerned and their proximity to the activity.

3.3.2 Accidental Pollution

In the context of this work, accidental pollution is the result of unintended discharge of petroleum in the course of exploration and exploitation of petroleum. Different factors are responsible for accidental discharges of oil and chemicals from offshore operations - equipment failure, human errors, organisational system failure and the difficulties of the operating environment. These factors could create problems that might result in serious blowout, fire and complete destruction of rigs and other offshore installations. Also, aging infrastructure could increase the risk of accidents.[42]

Admittedly, exploration and exploitation of petroleum is inherently dangerous, more so in challenging offshore environment where the cost of operation is also higher than onshore environment.[43] Different factors are responsible for accidents offshore. Generally, evidence from accidents indicates that they are as a result of human error and or equipment failure.

[40] Id, Gavouneli , supra note 34 at p.41
[41] OSPAR Commission Report 2009, supra note 26, p.17, In the North East Sea covered by OSPAR noise is addressed within the OSPAR JAMP assessment and background document on noise (OSPAR, 2009b and c)
[42] OSPAR Commission report 2009, note 26, p.17. According to the OSPAR Commission Report, there are concerns that the ageing infrastructure in Region II might increase the risk of accidents resulting in spills of oil and chemicals. Hence, as a control measure, since 2000 industry's awareness and need to report all spills irrespective of the spill size has increased due to better regulatory controls and increased environmental awareness.
[43] Read, Colin, supra note 8, p. 75; Gourlay, K. A, *Poisoners of the Sea* (Zed Books Ltd, London and New Jersey) p.50 (1988)

Human error was responsible for the January 1969 Santa Barbara Channel incident off the coast of Summerland in the waters of California. The well was 3,479 feet and was yet to be properly cased when the drill bit was removed from the well. The increased pressure caused by this action could not be contained which resulted in a blowout. The Ekofisk Bravo blowout of 22 April 1977 was also as a result of human error. In the course of maintenance, the blowout preventer was mistakenly installed or placed upside down on the well head. Another major disaster resulting from human error in maintenance process was the 1988 Piper Alpha fire in the United Kingdom's continental shelf in the North Sea in which 167 lives were lost.

The Funiwa 5 platform blowout on 17 January 1980, 8 kilometres off the coast of Nigeria in the Gulf of Guinea was caused by technical fault involving the collapse of the borehole wall, which then plunged into the well. Similarly, on 2 October 1980, the Saudi Arabian Hashah 6 platform with the Ron Tappmayer, a jack-up rig, experienced a blowout as a result of release of hydrogen sulphide fumes along with the petroleum.[44] There are other situations that may cause accidental pollution in offshore petroleum operations.[45] These could be due to metal fatigue of the rig structure,[46] weakness as a result of weather conditions such as impact of

[44] Gourlay, K. A., supra note 43, p.101

[45] Chevron operated KS Endeavour, a drilling platform leased from FODE Drilling Company burst into flame of the coast of Nigeria on 16 January 2012 due to suspected failure of surface equipment resulting in a 'gas kick'. Two persons were killed.

[46] BP's Sea Gem, a self-elevating barge and one of the earliest drilling rigs in UK Continental Shelf of the North Sea collapsed as a result of metal fatigue. The rig legs collapsed on 28 December 1965, killing 13 persons on board.

waves on the structure of the rig or installation,[47] towline failure[48] and collisions.[49] Moreover, there are a few cases of design defect resulting in accidents involving petroleum installations.[50]

In recent years the Macondo well[51] blowout of 20 April 2010 in which a multitude of factors were responsible demonstrates the dangerous nature of offshore E&P, the serious environmental consequences and legal implications of their outcome. The Deepwater Horizon,[52] a mobile offshore drilling rig was responsible for drilling an exploratory well which was later converted to a production well. The well, therefore, was to be put on temporary abandonment. However, close to completion of the abandonment process things went wrong. There was formation fracturing resulting in hydrocarbon flows and lost circulation events. This was compounded by poor cementing work that gave room for 'pore pressure and fracture gradient'. The drilling team erroneously determined that the cementing work had been successfully completed and they proceeded to carryout negative pressure test aimed at establishing the integrity of the cemented production casing. Despite confusing signs and results, the drilling team concluded that the negative pressure test was a success. This turned out to be a wrong and costly decision.

[47] On 2 January 1974, Transocean III, a self-elevating semi-submersible rig, operated by Mobil North Sea Limited sank in the North Sea as a result of structural defect inflicted on it by severe storm conditions in UK Continental Shelf. Same reasons were responsible for the sinking of Ocean Master II off the coasts of West Africa in June 1977. Also, on 15 February 1982, Mobil operated Ocean Ranger semi-submersible rig in the Hibernia Field sank off the coast of Newfoundland, Canada in the North Atlantic with 84 fatalities while Typhoon Gay in the Gulf of Thailand capsized the Seacrest Drillship on 3 November 1989, killing over 90 persons

[48] During severe storm in the Gulf of Mexico, the towline of the Ocean Express, a jack-up rig, failed and sank on 15 April 1976 with 13 casualties. A similar fate befell Bohai 2 rig which was on tow in the Gulf of Bohai, off the coast of China when it capsized on 25 November 1979 as a result of storm.

[49] On 21 October 2007 in the Gulf of Mexico, Usumacinta, a PEMEX operated mobile rig, collided with the platform (Kab-101) causing fuel leaks and death of 21 workers.

[50] There was a design error in the gravity base of Sleipner, a platform operated by Statoil in the Norwegian Continental Shelf that ended in its structural failure on 23 August 1991. Similarly, a jack-up rig by name Mr Bice sank in Grand Isle, LaGulf of Mexico in June 1998 due to structural failure and flooding.

[51] The Macondo well operated by BP was located in the Mississippi Canyon region of the Gulf of Mexico, some 50 miles off the coast of the state of Louisiana

[52] Operated by Transocean

The cementing gave way and there was escape of gas to the surface. Unfortunately, the blow out preventer (BOP) malfunctioned and technical well control measures and mechanism that were activated all failed. When well control could not be re-established flammable gas escaped from the well to the Deepwater Horizon. The gas which came in contact with oxygen caused double explosions and ignited fire on the Deepwater Horizon. After about 36 hours in flames the Deepwater Horizon sank and oil gushed uncontrollably from the Macondo well. At the time the well was finally 'killed' in July 2010, an estimated 5 million barrels of crude oil had seeped into the marine environment.[53] The accident killed 11 workers and inflicted injuries on 16 others. This spill was a pointer to the potential for offshore operations to cause serious environmental and human damage if not properly managed. The incident raised issues of effective response to offshore accidents, identification of the responsible party and the liability of the various actors (licensees, operator of the field and contractors) in an offshore E&P venture.

Another incident of global legal significance was the Montara well H1 blowout of 27 August 2009 which was also caused by a combination of equipment failure and human error. Drilling work on well H1 by West Atlas rig was temporarily 'suspended' on 21 April 2009 after supposedly putting in place measures to prevent escape of hydrocarbon. Unfortunately, on 7 March, 2009 there was a defective installation of a cemented casing which resulted in a wet shoe that was not detected. Also, the integrity of the cementing was not tested and confirmed. On 19 August 2009 the West Atlas rig resumed work on well H1. In the morning of 21 August 2009 the well kicked twice and resulted in a blowout. Human error and wrong judgement of both personnel on board the platform and onshore were blamed for the incident.[54] The amount of oil introduced into the sea was relatively small compared to the Macondo blowout but the

[53] NAENRC Deepwater Horizon Report 2012, supra note 9, pp.4-9
[54] Montara Commission Report, pp. 49-52, 343-350

significance of the Montara spill was its transboundary impact that raised issues of liability and compensation. It raised questions about the responsible party for the damage done to Indonesian waters in the Timor River. Can Australia be held responsible or is it PTTEP the operator that should be held liable for the damage to Indonesian waters? Who has locus standing to claim against a responsible party and is there access to justice for the victims in Indonesia?

Another incident which raised questions of civil liability and compensations for transboundary harm arising from offshore petroleum E&P was the Ixtoc I incident of 3 June 1979 in the Gulf of Mexico. It was caused by "a major loss of circulation" of drilling mud to the well[55] which triggered a blowout, explosion and fire that resulted in the destruction and sinking of the rig. At the time the well was successfully capped in March 1980 an estimated 129 million gallons (about 3 million barrels) of oil had leaked into the marine environment and the spread of the oil polluted the US waters. Ixtoc I was operated by PEMEX, a Mexican state owned oil Company and raised issues of responsibility and liability of Mexico and the operator.

Irrespective of safety measures that might be put in place there is always the probability of catastrophic accident like blowout[56] that may cause damage to marine ecosystem and humans.

3.4 Effect of Pollution from Offshore Operations

Petroleum operations by definition are adverse for the ecosystem, biodiversity and even social cultural dimensions.[57] The effects of oil on the marine environment range from the total

[55] *The Impact of the Blowout of the Mexican Oil Well Ixtoc I and the Resultant Oil Pollution on Texas and the Gulf of Mexico: Hearings before the House Committee on Merchant Marine and Fisheries and the Subcommittee on Water Resources of the House Committee on Public Works and Transportation,* 96th Congress, 1st Session 21 (1979) (Statement of Stephen Mahood); Macdonald, William J., 'Ixtoc I: International and Domestic Remedies for Transboundary Pollution Injury' 49 Fordham L. Rev 404 (1980-1981)
[56] See Brubaker, Douglas, supra note 22, p.37
[57] Zhiguo Gao, supra note 12, p.8

disruption of the ecosystem, destruction of sensitive immature life-forms or the elimination of food sources, to sub-lethal effects like poisoning, physiological changes and bioaccumulation.[58] When a spill occurs the species that will immediately be impacted are the organisms on the water surface, namely seabirds, marine mammals, minute organisms associated with the surface film and plankton (organisms in surface waters).[59] Humans are not safe either.[60]

Once oil is discharged into the sea approximately 1/3 to 2/3 of it will evaporate into the atmosphere and most of the oil become oxidized in a photochemical process in the atmosphere. Petrochemical oxidation and microbial degradation affect the oil chemically several hours or even days later. While petrochemical oxidation is a significant process, acting on oil on the ocean surface, dissolution into the water column is of considerably less importance because of the low solubility in water of most compounds of oil.[61]

The rate at which oil spreads on water is determined by wind, waves and the water current. It is discovered that open beaches with high wave action most times have only 10% or less of oil remaining after a year but in the case of low energy beaches with less wave action oil pollution may last for more than a year and up to several decades.[62] However, how oil will actually

[58] Evans, Shelley M., supra note 28, p. 264

[59] Dicks, B.M. and White, I.C., 'Oil Spills –Effects and Response', in William J. Cairns (ed.), *North Sea Oil and the Environment: Developing Oil and Gas Resources, Environmental Impacts and Responses,* (Essex: Elsevier Science Publishers Ltd.)p.445 1992. On the impact of accidental pollution on the marine environment see generally Patin, Stanislav, *Environmental Impact of the Offshore Oil and Gas Industry*, (East Northport: EcoMonitor Publishing) 1999; Boesch, Donald F. and Rabalais, Nancy N. (eds.), *Long Term Environmental Effects of Offshore Oil and Gas Development* (London: Elsevier Applied Science Publishers Ltd.) 1987; William J. Cairns (ed.), *North Sea Oil and the Environment: Developing Oil and Gas Resources, Environmental Impacts and Responses,* (Essex: Elsevier Science Publishers Ltd.) 1992; the reports of the Group of Experts on Scientific Aspects of Marine Pollution (GESAMP) entitled "The Impact of Oil on the Marine Environment," Report No 6 1977 and GESAMP, supra note 35; the US National Academy of Science 2003 report called *Oil in the Sea III*: *Inputs, Fates and Effects* (2003)

[60] According to Gourlay, "wrapped up, and frequently lost sight of, in the jargon are the simple fact that oil in the sea leads not only to such obvious, and pitiful, disasters as the death of thousands of seabirds, but has longer-term, more potentially far-reaching, effects on mammals, fish, plankton, plant life, and, through the food chain, may even affect human beings", Gourlay, K. A., supra note 43, p.84

[61] Dicks, B.M. and White, I.C., supra note 59; Gourlay, K. A., supra note 43, p.105

[62] See Brubaker, Douglas, supra note 22, p.14

behave in the arctic is not certain as there has been no petroleum E&P incident in the Arctic offshore. What is clear is that it will impact on the environment and the difficulties of access to site, limited daylight and harsh weather conditions would make response difficult.[63]

3.4.1 Effect on Humans

The negative impact of oil spill is emphasised more in relation to the environment, ecosystem and biodiversity than humans. In reality humans are greatly impacted by offshore petroleum exploration activities as they suffer economic losses following suspension of fishing activities and other marine related businesses. They may also suffer health complications from direct contact with oil and consumption of polluted fish. Some chemicals used in offshore operations may cause allergy, skin irritation or more serious effects such as cancer.[64]

3.4.2 Effect on Fish

Pollution by oil and chemicals used in offshore operations is a serious threat to the fish population, though the impact is much greater in cases of accidental pollution. An oil polluted environment has the effect of terminating life of fish and also push adults fish that are of great commercial value to deeper waters for safety. This makes them to be out of the reach of the fishing industry that usually carry out their trade within the waters of coastal States.[65]

[63] National Geographic, 'What Happens When Oil Spills in the Arctic?' Available at http://news.nationalgeographic.com/news/energy/2014/04/140423-national-research-council-on-oil-spills-in-arctic/ last visited 10 August 2015; National Academy of Sciences, *Responding to Oil Spill in the US Arctic Marine Environment* (National Academy Press) P.28 (2014); See also Arctic Council RP3 Project
[64] OSPAR Commission Report 2009, supra note 26, p.14
[65] Gavouneli, supra note 34, pp.38-39

Fish are affected through intake of spilled oil or contaminated prey and dissolved oil compounds through the gills. There are effects of oil on fish eggs and larva survival and by the ecological change caused by the oil. Fish appear more sensitive to short, acute exposures to oil and absorb lethal quantities in relatively shorter periods than invertebrates.[66] Fish eggs and larvae are easily affected by fluctuations in temperature and salinity and by pollutants in general due to their lack of sufficient structures and organs capable of detoxifying oil.[67]

3.4.3 Effect on Marine Mammals

Oil related activities like underwater explosions, drilling noise, discharge of poisonous chemicals and noise from drill ships may have damaging effect on marine mammals.[68] When oil is released into water in the course of normal operations or accidentally, mammals (and turtles) that may consume food tainted with oil are exposed to potential toxic effects. There is indication to suggest that some tissue hydrocarbons may reduce breeding success in both birds and mammals.[69] Oil in large quantities may also coat fur of some marine mammals which reduces their ability to provide buoyancy and insulation, leading to increased mortality.[70]

[66] See Brubaker, Douglas, supra note 22, p. 18
[67] *Exposure to BP oil-contaminated sediment causes defects in Killifish, study says*, available at http://www.nola.com/environment/index.ssf/2013/05/exposure_to_sediment_contamina.html#incart_river accessed on 8 May 2013
[68] Brubaker, D., supra note 22, p.23
[69] OSPAR Commission Report 2009, supra note 26, p.13
[70] Id. According to the OSPAR Commission Report 2009 supra note 26, at p.30 "Evidence indicates that for marine mammals there may be some behavioural changes in areas where seismic surveys are being undertaken with reduced vocalisation and some evidence of avoidance behaviour. Temporary threshold shifts in hearing can occur if they are within close proximity of sound source. Impacts on fish from seismic surveys have been shown to occur with an increase in fish mortality less than 5 metres from the sound source. Temporary threshold shifts and behavioural responses have also been reported. Evidence from North Sea indicates potentially large scale avoidance of areas where seismic surveys are being undertaken with fish either moving into deeper water or avoiding the area altogether. Experiments undertaken in the North Sea on sandeels indicated relatively minor responses from seismic surveys with no increases in mortality."

3.4.4 Effect on Marine Birds

Marine birds are among marine species most impacted by oil and gas operations, especially when there is an accidental spill of great amount of oil. These birds are affected as they live most of their lives on the surface of the sea where spilled oil is also concentrated.[71] The oil clogs the feathers that are essential to birds in maintaining water repellency and heat insulation. The loss of repellency allows the bird's feathers to absorb water and result in the bird sinking and drowning.[72] Loss of insulation greatly increases metabolism to maintain body heat, in which case the bird exhausts its fat and muscular energy reserves and dies as a result.[73] Also, when cleaning oiled feathers, birds may in the process swallow oil with attendant toxic effects.

3.4.5 Effect upon Marine Bacteria, Phytoplankton and Invertebrates

There are bacterial cells and bacterial–consuming micro-organisms in the ocean that transfer energy, sunlight or organic material to the food chain. When oil spill occurs, these dead organic materials increase and feed on dissolved oil and on oil droplets resulting from the soluble components of oil.[74] Oil affects invertebrates like snails, crabs and shell clams even after a considerable length of time of the occurrence of a spill.[75]Another micro-organism which oil may affect is phytoplankton that is at "the bottom of the marine food chain and creates the basis

[71] Gourlay, K. A., supra note 43, pp.110-111
[72] Clark, R. B., *Marine Pollution*, 5th edition (Oxford University Press) p.84 (reprint 2002)
[73] Id at p.24
[74] OSPAR Commission Report 2009, supra note 26, p.29
[75] Id

of life in the sea by its photosynthesis."[76] However, some argue that the effect of oil on this class of organisms is not as gloomy as some laboratory studies suggest.[77]

3.4.6 Effect on Coastal Vegetation

Heavy spill of oil affects the vegetation on the coast when it reaches the shore. While those lightly touched by oil may recover, the vegetation that is coated with thick layer of oil could be overwhelmed and the devastation can be catastrophic. Marshes that loss vegetation may be easily washed away by tidal erosion once there is loss of vegetation caused by oil spills. Death of trees and seedlings, defoliation and deformation may also occur. In tropical environments such as the Niger Delta of Nigeria and the Caribbean, mangrove swamps can be affected greatly by crude oil, though the damage may not be apparent immediately following the spill, as mangrove trees die slowly from the effect of oil.[78] However, based on some situations where mangroves have survived oil spill their vulnerability to oil pollution may need further studies.[79]

3.5 Conclusion

Offshore operations is increasingly technical and very challenging as activities move further into deep and ultra-deep waters. The challenges of the deep seas and the technology employed in the operations require great presence of mind and expertise. Anything less is an invitation to accident and major environmental disaster.

[76] Id, this could be up to 8 years after the incident.
[77] Clark, R. B., supra note 72, pp.84-85
[78] Gourlay, K. A., supra note 43, p.107. This was evident in the case of the Funiwa 5 blowout in the Niger delta of Nigeria where it was discovered fourteen months after the spill that mangroves in an area of about 836 acres had died from the oil impact, see Incident News 17 January 1980, available online at http://incidentnews.noaa.gov/incident/6256/507727 last visited 19 August 2015
[79] Clark, R. B., supra note 72, p.85

Considering the serious environmental impact that offshore operations have on the marine environment, especially when accidents occur, it is imperative that both technical and human elements of these operations are sufficiently regulated at international and municipal levels to prevent accidental pollution.

CHAPTER FOUR

PREVENTION OF ACCIDENTAL POLLUTION FROM OFFSHORE PETROLEUM OPERATIONS

4.0 Introduction

Offshore petroleum operations are undertaken in dynamic and challenging marine environment in which technical, human and organizational malfunctions may cause major accidents, including blowout which are a significant problem in the petroleum industry. A large scale fatal accident has occurred in every two to three years in the past thirty years.[1] More than ever before the fundamental issue in offshore petroleum industry is how to prevent the occurrence of a major accident. This need to prevent accidents and environmental pollution is not peculiar to the petroleum industry but cuts across many industries and activities.[2] Hence, great emphasis is being placed on the duty of prevention in international environmental law.[3] Like the saying that 'prevention is better than cure,' the prevention of pollution is believed to be the smartest, cheapest and cleanest solution for the environment and public health.[4]

Bearing in mind the requirements of the principle of prevention, this chapter would examine relevant international instruments, global and regional, containing obligation to prevent accidental pollution from offshore petroleum operations. Also, the mechanisms to be employed in fulfilment of that obligation.

[1] Health & Safety Middle East, *The Three Cs of Oil and Gas Safety*, op cit.; RPS Energy, *Preventing Major Accidents in the Oil and Gas Industry*, P.1 (2010) op. cit.
[2] The chemical industry has had its fair share of accidents, with the Bhopal disaster of December 1984 considered as one of the world's worst industrial accidents; in the nuclear industry, Chernobyl disaster of 1986 and the Fukushima Daiichi nuclear disaster of 2011 are sad reminders of the consequences of failure to prevent accidents
[3] Iron Rhine case (2005), paras. 55; Pulp Mill case (2010) pages 55-56, para. 101
[4] Pollution Prevention, EPA J. Vol.21 Issue 1, p.38 (1995)

4.1 Obligation to Prevent Accidental Pollution from Offshore Petroleum Operations

The right of coastal States to exploit resources in their maritime territories must be in accordance with the obligation to "protect and preserve the marine environment" as provided in Article 192 of UNCLOS. In line with customary international law and UNCLOS provisions States must ensure proper regulation of activities under their jurisdiction or control not to cause damage by pollution to other States and environment beyond national jurisdiction.[5] It is also mandatory on States to individually or jointly take all measures necessary and in consonance with the convention to prevent, reduce and control pollution of the marine environment from any source.[6] This includes accidental pollution from offshore petroleum E&P.[7] In order to fulfil this obligation, States are to use "the best practical means at their disposal and in accordance with their capabilities".[8]

However, this obligation is arguably not absolute and States can hardly be held liable for such transboundary impacts as a State is only expected to exert due diligence[9] to prevent such harm. Based on the existing international binding instruments, States do not necessarily guarantee that there will be no harm in all circumstances. Employing the best practical means aimed at preventing accidents would suffice.[10] These steps should include prescription and enforcement of strict construction and operating standards for offshore installations to prevent accident due to structural and equipment failure, organisational and personnel weakness. Hence, good

[5] UNCLOS, Art. 194(2); the locus classic case is the *Trail Smelter Arbitration* which was amplified subsequently in Principle 21 of Stockholm Declaration and Principle 2 of Rio Declaration .
[6] UNCLOS, Art. 194 (1)
[7] UNCLOS, Art. 194 (3)(c)
[8] Id.
[9] Due diligence is defined as 'a diligence proportioned to the magnitude of the subject and to the dignity and strength of the power which is exercising it', see Alabama Claims Arbitration (1872), 1 Moore's International Arbitration Awards 485
[10] Article 194(1). In the Chenobyl accident States not being sure of the culpability of Russia did not push claims against the Russian government.

design, proper construction and equipment of installations manned with qualified personnel are key preventive measures.[11]

As offshore petroleum operations move further into deep and ultra-deep waters the provisions of Article 196 of UNCLOS making it mandatory for States to "take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control" becomes apt in providing the needed obligation to apply caution in the use of technology in marine activities.[12] Though it is doubtful if the draftsman of Article 196 had in mind deep and ultra-deep water petroleum exploration and exploitation at the time it was drafted. Malta which first proposed and presented the draft article considered the possible use of technology in ways that "may cause significant and extensive change in the natural state of the marine environment" and therefore wanted such use to be controlled to prevent marine pollution.[13] Given its framework nature, Article 196 provides the basis for further development of a legal regime to regulate the use of technology for offshore operations at global and regional levels.

Article 193 of UNCLOS reconfirming Principle 21 of the 1972 Stockholm Declaration and Principle 2 of the 1992 Rio Declaration affirms the right of States to exploit natural resources within their territorial jurisdiction and a duty to avoid transboundary effects of pollution. It came short of establishing an obligation to protect and preserve the environment in the exercise of the exploitation rights. However, other principles of the Stockholm Declaration made the protection of the environment a general duty of all States. A stronger expression is found in

[11] The Deepwater Horizon disaster has some design challenges in terms of the BOP and the integrity of the cementing work coupled with the judgment of the personnel on board the MODU
[12] Brown, E. D., *Sea-bed Energy and Mineral Resources and the Law of the Sea, Vol. 2, The Area Beyond the Limits of National Jurisdiction* (Graham & Trotman) II.9 12 (1986)
[13] Nordquist, Myron H., Vol. IV(1991), op. cit., p. 74, para 196.2

Article 193 of UNCLOS wherein the States' right to exploit resources must be exercised only "in accordance with their duty to protect and preserve the marine environment".[14]

4.1.1 Obligation to Cooperate

As an umbrella treaty, UNCLOS calls for regional cooperation in the measures that States take in respect of potentially harmful activities and prevention of pollution by encouraging the establishment of regional and global regulations to prevent, reduce and control pollution from offshore activities.[15] Article 197 of UNCLOS imposes an obligation on States to "cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features." While global cooperation in formulating rules in relation to shipping is well established and sufficiently effective[16] same cannot be said of marine pollution arising from offshore petroleum E&P.

In a clear application of the principle of common but differentiated responsibility, Article 203 of UNCLOS provides for developing States to be given preference by international organizations in allocation of appropriate funds and technical assistance. Same differential treatment is required in the utilization of specialized services they provide for the purposes of prevention, reduction and control of pollution of the marine environment or minimization of its effects. This is in addition to scientific and technical assistance States are required to give

[14] Birnie, P., Boyle, A. and Redgwell, C., op. cit., p.387
[15] UNCLOS, Art. 208(4) & (5)
[16] Under the auspices of IMO several conventions with global application have been adopted to improve safety of shipping and protection of marine environment. Examples are MARPOL 73/78, SOLAS, SWTC, Civil Liability Conventions and the 1989 Salvage Convention

to developing countries directly or through competent international organisations for prevention, reduction and control of marine pollution and assistance to minimize the effects of major incidents that may result in serious pollution of the marine environment.[17]

Cooperation is also emphasised at the regional level. For instance, under the OSPAR Convention where preventive measures fail and an accident is likely to result in transboundary impacts, Parties must cooperate and negotiate a cooperation agreement with a view to reaching satisfactory solution in the circumstance.[18] Parties to the 1992 Helsinki Convention recognised that protection and enhancement of the sea requires "close regional co-operation and other appropriate international measures".[19]

4.1.2 Obligation at Regional Levels

In addition to the global obligation, different regional sea agreements also impose obligation to prevent marine pollution. For instance, parties to the Barcelona Convention are to "take all appropriate measures to prevent, abate, combat and to the fullest extent eliminate pollution of the Mediterranean Sea area resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil".[20] Similarly, the 1994 Offshore Protocol obligates contracting States to use, among other measures, the "best available techniques, environmentally effective and economically appropriate" measures and techniques to prevent pollution from offshore activities.[21] But the question of what "appropriate measure" is would be subjective and reflect

[17] UNCLOS, Art. 202
[18] OSPAR Convention, Art.21
[19] 1992 Helsinki Convention, Para. 5 of the Preamble
[20] Barcelona Convention, Art. 7
[21] 1994 Offshore Protocol, Arts. 3(1) and 8

the political will or capacity of each State. Furthermore, they must ensure that all necessary measures are taken for offshore activities not to cause pollution.[22]

In the North-East Atlantic region, parties to OSPAR are to 'take all possible steps to prevent and eliminate' marine pollution and in appropriate situation restore damaged marine environment.[23] Most of the provisions of Annex III address pollution that arises from the normal operations of offshore installations such as dumping of waste and disused offshore installations and pipelines[24]and discharges or emissions from 'offshore sources'.[25] What appears to be applicable to accidental pollution from offshore operations is contained in Article 7 that obligates parties to take appropriate measures individually and within relevant international organisations "to prevent and eliminate pollution resulting from the abandonment of offshore installations in the maritime area caused by accidents." The OSPAR Convention seems to lack provisions regulating offshore petroleum operations with a view to preventing major accidents. However, where there are no international guidelines in this regard measures shall be based on such guidelines as the OSPAR Commission may adopt as part of the OSPAR treaty regime.[26]

The fundamental obligation under the 1992 Helsinki Convention is for parties to prevent and eliminate pollution through the application of the precautionary principle that requires parties to take preventive measures where there is the likelihood that an activity may "create hazards

[22] Id., Art.3(2)
[23] 1992 OSPAR, Arts 2(1) and 5. The obligation to 'eliminate' marine pollution in this convention is an improvement on UNCLOS which used the word 'control'. Moreover, the requirement to take "all possible steps" is to ensure commitment by parties to stop at nothing in preventing marine pollution.
[24] Id, Arts.3, 5 and 8 of Annex III
[25] Id, Art.4 of Annex III; offshore sources under the convention means "offshore installations and offshore pipelines from which substances or energy reach the maritime area", see Art. 1(k) of 1992 OSPAR Convention.
[26] OSPAR Recommendation 2010/18 on the prevention of significant acute oil pollution from offshore drilling activities; OSPAR Recommendation 2011/8 amending OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations as amended; OSPAR Recommendation 2006 on Management Regime for Offshore Cuttings Piles; OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations and OSPAR Decision 2000/3 on the use of Organic Phase Drilling Fluids (OPF) and the discharge of OPF-Contaminated Cuttings; OSPAR Recommendation 2012/5 for a risk-based approach to the Management of Produced Water Discharges from Offshore Installations

to human health, harm living resources and marine ecosystem" even in the absence of conclusive proof.[27] There is no doubt that offshore petroleum operations could create those negative effects if an accident does occur and as such requires precautionary measures to be taken.

In respect of offshore operations the Helsinki Convention imposes obligation on Member States to take all appropriate measures to prevent pollution of the Baltic Sea from exploration and exploitation of the seabed and subsoil or from any 'associated activities thereon'.[28] Annex VI on prevention of pollution from offshore oil and gas exploration and exploitation activities, provides for the procedures and measures to be undertaken to prevent and eliminate pollution from such activities.[29]

4.2 Mechanism for Prevention of Pollution

Prevention of accidents and pollution of the marine environment is the 'litmus test' of any operator. This is also the fundamental concern of the regulator. There are various elements and factors that come to play in ensuring safe offshore petroleum operations. Some of which are the legal regime, authorisation of offshore operations, the design, construction and equipment of installations, application of environmental principles and measures for prevention, and manning of offshore installations.

[27] 1992 Helsinki Convention, Art.3(1)&(2)
[28] Id., Art.12
[29] Id., Art. 12(2); whether those procedures and measure are adequate is a different issue to be determined separately.

4.2.1 Legal regime

Article 208 of UNCLOS addresses the need to prevent pollution from seabed activities subject to national jurisdiction. Though with no clear requirements and set standards, it makes it obligatory on coastal States to have legislations to prevent, reduce and control pollution that may arise from seabed activities in the continental shelf, artificial islands, installations and structures within national jurisdiction pursuant to Articles 60 and 80. But States are at liberty to decide on measures necessary for the prevention, reduction and control of such pollution. The laws must stipulate measures not less effective than international rules, standards and recommended practices and procedures.[30] Such international rules, standards and recommendation must be binding for States to be legally bound to use them as benchmark for their national laws and regulations. Where there are no binding international rules and standards States may incorporate such international rules into their municipal laws and regulations to give them force of law.[31] On the other hand, in the absence of binding international rules, standards and recommended practices, States would determine the criteria and standards for authorisation of offshore petroleum operation to prevent, reduce and control pollution. But this may not guarantee uniformity of standards of operations globally.

[30] UNCLOS, Art. 208(2) & (3)

[31] For instance, the Nigerian Petroleum Industry Bill (PIB) of 2012 expects oil and gas operations to be done in line with good oilfield practice. Section 362 of the PIB defines "good oilfield practice" to mean, among other things, "knowledge of and compliance with the latest standards developed by relevant professional institutions including but not limited to: the American Gas Association (AGA); the American Petroleum Institute (API); the American Society of Mechanical Engineers (ASME); the American Society for Testing Materials (ASTM); the British Standard Institute (BSI); the International Organisation for Standards (ISO); and any other organisation deemed acceptable by the Inspectorate"

4.2.2 Authorisation of Offshore Operations

In exercise of their sovereign rights, a coastal State has the exclusive power to "authorise and regulate drilling on the continental shelf for all purposes."[32]

Authorisation of offshore operations is the exclusive preserve of the coastal State. Perhaps, this explains the seeming lack or complete absence of global provisions with definitive criteria for authorization to undertake offshore petroleum operations. Various regions and States have their own conditions for granting of operational licences. To guarantee safety and prevent accidental pollution the conditions for authorisation of offshore operations must ensure that only competent and credible entities are granted such permits.

In the Mediterranean Sea region, in respect of issuance of licences for offshore exploration and exploitation, the Offshore Protocol places premium on evidence of financial capacity to settle liability in the event of an accident.[33] Also, the granting authority must be satisfied that the installation has been constructed to "international standards and practice" and the operator has the technical competence and finance to undertake offshore operations.[34] In line with the supportive role of polluter pays principle, it requires licence to be supported by insurance or other financial security to cover liability relating to compensation for any damage that may be caused by such offshore activity.[35]

The Operator's competence notwithstanding, conditions relating to measures, techniques or methods designed to reduce to the minimum risks of major hazard may be imposed by the

[32] UNCLOS, Art.81; see also Art.85 and similar provisions contained in Article 7 of the 1958 Geneva Convention on the Continental Shelf. On the international regime of the continental shelf see Brown, E. D., *Sea-Bed Energy and Minerals: The International Legal Regime, Vol.1 The Continental Shelf* (Martinus Nijhoff Publishers)361-415 (1992); Brown, E. D., *The International Law of the Sea, Vol.1 Introductory Manual* (Dartmouth) 350-360 (1996)
[33] 1994 Offshore Protocol, Art. 4(1)
[34] Id.
[35] Id., Arts. 5(1)(i) and 27(2)(b)

authorization.[36] In the case of an abandoned or disused installation, the operator will still be required to take all necessary measures to prevent spillage or leakage from the operational site prior to the removal of the installation.[37] Monitoring requirements may also be imposed on the operator.[38]

However, the OSPAR and Helsinki Conventions did not provide conditions for authorisation of offshore petroleum operations.

4.2.3 Design, Construction and Equipment of Offshore Installations

The design, construction and equipment of offshore installations is relevant to the safety of operations. Presently, there are no global and regional binding instrument on standards and guidelines relating to the construction and operation of offshore installations used for petroleum exploration. An attempt at having a global instrument was made by the International Maritime Organisation (IMO) in 1979 when it adopted a Code for the Construction and Equipment of Mobile Offshore Drilling Units (MODU).[39] A subsequent Code was adopted in October 1989 and made applicable to units constructed after 1 May 1991.[40] Its purpose was to recommend design criteria, construction standards and other safety measures for MODUs in order to minimise the risk to such units, to personnel on board and to the environment. A mobile offshore drilling unit is defined as a vessel capable of engaging in drilling operations for the

[36] 1994 Offshore Protocol, Art.6(3)
[37] Id., Art.20
[38] Id., Art.19
[39] IMCO Resolution A.414(XI) of November 1979
[40] Resolution A.649 (16). *See Code for the Construction and Equipment of Mobile Offshore Drilling Units* (MODU Code) (1990 edition), IMO Publication 811 90.05.E

explorations for, or exploitation of resources beneath the seabed such as liquid or gaseous hydrocarbons, sulphur or salt.[41]

UNCLOS did not provide any global criteria for design, construction and equipment of offshore installations. It only requires States to ensure safety of such operations by regulating the design, construction, equipment, operation and manning of the installations and devices.[42]

Among regional instruments the provisions of Article 15 and Annex VI of the Mediterranean Offshore Protocol are of relevance. They address safety of offshore operations as an important aspect of preventing, combating and controlling pollution. They provide that safety measures must be taken in terms of the design, construction (taking into consideration the offshore weather conditions), placement, equipment, marking, operation and maintenance of installations.

Also a Contracting Party is to ensure that the operator has on the installations, at all times, adequate equipment and devices in good working order to *prevent and combat accidental pollution* and protect human life. An operator should be able to facilitate prompt response to an emergency using the best available environmentally effective and economically appropriate techniques.[43] The requirement for the use of 'best available environmentally effective and economically appropriate techniques' may create conflict between environmental and economic considerations in the choice of technique or technology to be employed to guarantee safety in the operation. On the whole, every installation must be safe and fit for purpose and designed to withstand difficult offshore weather conditions, earthquakes, sea conditions and water depth.[44] A monitoring system is also necessary to ensure that activities are conducted in

[41] See para 1.1 of MODU Code Consolidated Edition 2001
[42] UNCLOS, Art.194(3)(c)
[43] Offshore Protocol, Art.15(1) & (2) (emphasis mine)
[44] Id., Annex VI Clause (a)

the safest possible way at all times.[45]While these provisions are plausible, the challenge is the implementation and enforcement to achieve the desired goal, which is, prevention of accidents and pollution.

The OSPAR Convention obligates parties to "adopt programmes and measures which contain, where appropriate, time-limits for their completion and which take full account of the use of the latest technological developments and practices designed to prevent and eliminate pollution fully."[46] This provision creates room for adaptation and employment of new technology that may guarantee safety under any prevalent offshore operational circumstances.

4.2.4 Application of Environmental Principles and Measures for Prevention

Environmental treaties usually contain requisite principles for environmental protection. The Mediterranean Offshore Protocol urges States to use, among other measures, "best available techniques, environmentally effective and economically appropriate" measures and techniques.[47] Furthermore, they must ensure that all necessary measures are taken for offshore activities not to cause pollution.[48]

In the OSPAR Convention polluter pays and precautionary principles are to be applied in addressing marine pollution,[49] both from fixed and floating offshore platforms in the maritime area and engaged in exploration, appraisal or exploitation of oil and gas.[50] Operation

[45] Id., Annex VI Clause (b)
[46] OSPAR Convention, Art.2(3)(a)
[47] 1994 Offshore Protocol, Arts. 3(1) and 8. It is doubtful if application of economic considerations will result in good environment and safety option for the offshore oil and gas industry.
[48] Id., Art.3(2)
[49] 1992 OSPAR Annex I, Art. 2(2). These obligations are much more mandatory and binding than the provisions of UNCLOS in view of the use of the word 'shall'.
[50] Id., Art. 5. See generally Annex III that addresses prevention and elimination of pollution from offshore sources; also Art.1(j)&(l) where "offshore activity" is defined as "activities carried out in the maritime area for the purposes of the exploration, appraisal or exploitation of liquid and gaseous hydrocarbons" and "offshore

programmes and measures shall take into account 'best available techniques', 'best environmental practice', and 'clean technology' where appropriate.[51] Bearing in mind that 'best available techniques' are subject to the factors enumerated in paragraph 2 of Appendix 1 and "best environmental practice" is subject to the consideration of factors in paragraph 6 of Appendix 1 would change with time in line with advances in technology, economic and social factors and with changes in scientific knowledge and understanding.[52]

Annex III of OSPAR Convention focuses on "Prevention and Elimination of Pollution from Offshore Sources". It obligates Contracting parties in the adoption of preventive programmes and measures to require the use of 'best available techniques' and 'best environmental practice', and where appropriate, 'clean technology' while priorities are to be set in accordance with the criteria given in Appendix 2.[53] Oil and hydrocarbons of petroleum origin are obviously among substances that are subject to the requirement for adoption of programmes and measure.[54] The criteria in setting priorities include persistency, transboundary significance and risk of negative changes to marine ecosystem and irreversibility or resilience of effects. Others are interference with sea-foods harvest or other legitimate uses of the sea[55] that are possible effects of accidental pollution from offshore petroleum operations.

Similarly, parties to the Helsinki Convention are required to apply the polluter-pays principle and promote the use of "Best Environmental Practice" (BEP)[56] and "Best Available

installation" is defined as any man-made structure, plant or vessel or parts thereof, whether floating or fixed to the seabed, placed within the maritime area for the purpose of offshore activities". These were clearly excluded in the definition of "vessel or aircraft" in Art. 1(n).

[51] Id., Art.2(3)(b)(i)(ii); Appendix 1 of the Convention defines the term "best available techniques" to mean "the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste." And "best environmental practice" to mean "the application of the most appropriate combination of environmental control measures and strategies."

[52] Paragraphs 3 and 8 of Appendix 1 of 1992 OSPAR Convention.

[53] Id, Art.2 of Annex III

[54] Id., Paragraph 3 of Appendix 2

[55] Id., Paragraph 1 of Appendix 2

[56] In the convention "Best Environmental Practice" means the application of the most appropriate combination of measures. These measures would include among other things the precautionary principle, "potential benefit

Technology" (BAT).[57] What is BEP and BAT may alter with the changes in technological advances, scientific knowledge and understanding and economic and social factors because of the factors that determinate them.[58] Article 3 which requires additional measures to be taken when the application of BEP and BAT do not lead to environmentally acceptable results is significant. It means operators are expected to do all within their reach and power to prevent accidents and pollution.[59] This is similar to the provision of OSPAR Convention which requires parties to take "all possible steps" to prevent and eliminate pollution. In consonance with international norms all measures and preventive actions must ensure that transboundary pollution is avoided.[60]

Annex IV of the Helsinki Convention, which addresses prevention of pollution from ships is applicable to offshore fixed or floating platforms and submersibles by virtue of the Convention's definition of 'ship' in its Article 2(3). However, it is focused on operational discharges and not accidental pollution. More detailed provisions on prevention of pollution from offshore activities is provided for in Annex VI. Parties again are obligated to prevent and eliminate pollution from offshore activities through the application of the "Best Environmental Practice" (BEP) and "Best Available Technology" (BAT) principles.[61] Most of the regulations dwell more on pollution that may arise from normal operations of an offshore petroleum installation.[62] The requirements for an environmental impact assessment and notification of the

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or penalty of substitute materials or activities", possible changes and advances in scientific knowledge and understanding and social and economic implications of the measures; see Regulation 2, Annex II of 1992 Helsinki Convention.

[57] "Best Available Technology" means 'the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges', see Regulation 3, Annex II of 1992 Helsinki Convention. For a determination of the BAT comparison must be made with recent successfully tried technology; consider the advances in technology, scientific knowledge and understanding; economic feasibility of the technology and the precautionary principle.

[58] Regulation 4, Annex II of 1992 Helsinki Convention

[59] This is more or less like a performance based regulatory situation where the goal is prevention of accidents through environmentally acceptable means. See similar provisions in Arts. 2(1) and 5 of OSPAR Convention

[60] 1992 Helsinki Convention, Art.13

[61] Regulation 2, Annex VI of 1992 Helsinki Convention

[62] Regulations 4 and 5, Annex VI of 1992 Helsinki Convention

Helsinki Commission of the outcome before the commencement of operations are commendable.[63]

4.2.5 Manning of Offshore Installations

Human error has been identified as one of the factors responsible for major hazards in offshore petroleum operations. Therefore, the type of personnel in-charge and working on board an offshore installation is critical to its safety. The Mediterranean Offshore Protocol while advocating for the use of the most advanced safety systems requires periodic tests to minimize possible accidents. This is to be done with the availability of trained specialised crew to operate and maintain these systems and undertake periodic exercises.[64] Moreover, persons in control of an installation and or the activities thereon, especially persons responsible for the blow-out preventer must have the requisite qualifications and be permanently available.[65]

Other regional conventions do not provide for manning of offshore installations, but most countries in those regions may benefit from the regime introduced by the EU Directive on offshore safety which is applicable to all three regions.

4.3 Prevention of Accidental Pollution under EU Directive 2013/30/EU on Offshore Safety

Safety of offshore oil and gas operations in European Union waters is chiefly governed by Directive 2013/30/EU. The Directive provides the minimum standard applicable to prevention of accidents in offshore oil and gas operations within the EU. Though the European

[63] Regulation 3, Annex VI of 1992 Helsinki Convention
[64] Offshore Protocol, Annex VI Clause (c)
[65] Id., Annex VI Clause (f)

Commission could explore other appropriate means of improving prevention of accidental pollution.[66]

4.3.1 Obligation of Parties

The essence of the Directive was succinctly stated in paragraph 2 of the preamble as follows:

> "The objective of this Directive is to reduce as far as possible the occurrence of major accidents relating to offshore oil and gas operations and to limit their consequences, thus increasing the protection of the marine environment and coastal economies against pollution, establishing minimum conditions for safe offshore exploration and exploitation of oil and gas and limiting possible disruptions to Union indigenous energy production, and to improve the response mechanisms in case of an accident."

In other words, the central idea of the Directive was to establish "minimum requirements" for preventing the occurrence of major accidents in offshore oil and gas operations within EU waters. If and when prevention fails, it is to ensure that responses to major accidents are prompt and adequate to minimise the consequences.[67] In what seems like a self-regulatory obligation, operators are to act proactively and maintain the highest level of safety.[68]

The EU believes the best regulatory practices necessary for highest safety standards are achievable through integration of "related functions into a competent authority that may draw resources from one or more national bodies."[69]The competent authority is to be given various powers by Member States for the purpose of achieving the objective of the Directive. These include powers to prohibit operations where the report on major hazards for prevention or

[66] EU Offshore Safety Directive, para.62 of the preamble.
[67] EU Offshore Safety Directive, Art. 1(1) and Para 65 of the Preamble
[68] Id., para.40 of the Preamble
[69] Id., para. 18 of the Preamble

limitation of consequences of major accidents is insufficient; power to take adequate measures to ensure the continued safety of operations; and power to require improvement on the operations or prohibit continued operations if the requirements of the Directive are not met or the oil and gas operations raise safety concerns.[70]

Perhaps, in recognition of the fact that safety of offshore oil and gas operation is a global issue, the Commission makes a commitment to "promote high safety standards for offshore oil and gas operations at international level in relevant global and regional fora, including those related to Arctic waters."[71]

4.3.2 Coverage

In terms of geographical scope, the Directive will have influence in four marine regions. This is because the EU Member States sovereignty or sovereign rights and jurisdiction partly extend to marine waters of the Baltic Sea, North-east Atlantic Ocean, the Mediterranean Sea and the Black Sea.[72] By the definition of offshore in Article 2(2), the Directive is applicable beyond the territorial sea to the exclusive economic zones or continental shelves of its Member States. Although MODUs in transit are considered to be ship and subject to relevant provisions and applicable construction codes of SOLAS, MARPOL, once stationary for the business of offshore oil and gas operation they become subject to the provisions of the Directive.[73]

The Directive has a level of global implication as EU operators are required to apply their major accident prevention policy in their operations outside Union waters "as far as possible within the applicable national legal framework."[74] This requirement is not mandatory and is made

[70] Directive 2013/30/EU, Art.18
[71] Id., Art.33(3)
[72] Id., para.50 of the Preamble
[73] Directive 2013/30/EU , Preamble, para.32
[74] Id.,para.37

subject to national laws of the non-EU Countries. It therefore provides a lee way for operators to hide under the guise of compliance with national laws to operate below the expected standards under the Directive. This is a whittled down version of what was contained in the 2011 proposed regulation of the European Council. In the 2011 proposed regulation for the purpose of pollution prevention, licensees, operators and major contractors based in the Union were to conduct their offshore oil and gas operations outside the union in accordance with the principles set out in the Regulation.[75]

4.3.3 Authorisation

The process of authorisation and grant of offshore operational licences are given serious consideration in the Directive. It sets up minimum criteria or conditions that must be considered by EU Member States in the process of granting licenses and authorising offshore oil and gas operations. These conditions include, inter alia, the financial capacity of the operator to settle liabilities and other responsibilities that come with a major accident,[76] the safety record and technical competence of the operator.[77]

The Directive also stipulates some conditions precedent that must be fulfilled and documents submitted to the competent authority before carrying out offshore oil and gas operations within EU waters. The documents include design notification which must indicate that "the concept contributes to reducing major hazard risk to an acceptable level";[78] a report on major hazard that must demonstrate that all major hazards have been identified with their likelihood and consequences assessed together with the control measures to reduce the risk of major accident

[75] 2011 European Commission's Proposed Regulation on Safety of Offshore Oil and Gas Operations, Art. 18(6)
[76] Id., Art.4
[77] Id., Art.4(2)(d)
[78] Id., Art.11(1)(c) and Annex I, Part 1; To ensure safety designs must follow the best practice defined in authoritative standards and guidelines; see Paras. 29 and 30 of the Preamble

to an acceptable level.[79] Also, a notification of well operation that inter alia, incorporates the particular risk associated with well operation with "environmental, meteorological and seabed limitations on safe operation", possibilities for simultaneous major hazard potentials, surface hazards, suitable control measures and in the event of any change or modification to the well, additional sufficient details to update the notification.[80] Other required documents are internal emergency response plan containing a description of foreseeable conditions and events likely to cause major accidents as contained in the report on major hazards which must be site specific; [81] the safety and environmental management system report;[82] and the corporate major accident prevention policy.[83]

Importantly, operators are not to be relieved of their duty of prevention of major accident even where the actions or omissions leading or contributing to the major accident were carried out by a contractor.[84]

4.3.4 Mechanisms for Prevention

To achieve the goal of prevention of accidental pollution, the EU Member States must require operators and owners of offshore installations to have a corporate major hazard prevention policy that take into cognisance their primary responsibility for control of risk of major accidents. The policy must be implemented throughout the life circle of the operations.[85] Operators and owners would also be required to prepare their safety and environmental management system as part of documents required for carrying out offshore oil and gas

[79] Id., Art.11(1)(e) and Annex I, Part 2
[80] Id., Art.11(1)(h) and Annex I, Part 4
[81] Id., Arts. 11(1)(g) and 14 and Annex I, Part 10; see also Para. 35 of the Preamble
[82] Id., Arts. 11(1)(b) and 19(3)&(5) and Annex I, Part 9
[83] Id., Arts. 11(1)(a) and 19(1) and Annex I, Part 8
[84] Id., Art.3(2)
[85] Id., Art.19 (1) & (2); see also Paras. 26 and 27 of the Preamble

operations. The policy document must have clear organisational arrangements for control of major hazards; submission of major hazard reports and related documents; and schemes for independent verification established in line with the requirements of Article 17 of the Directive.[86] Description of the independent verification scheme is to be submitted within the safety and environmental management system that is required in the application for authorisation to carryout offshore oil and gas operations.[87]

There are two main purposes for the establishment of schemes for independent verification by operators and owners as provided in Article 17. First, it is to provide guarantee for installations that "the safety and environmental critical elements identified in the risk assessment for the installation, as described in the report on major hazards, are suitable and that the schedule of examination and testing of the safety and environmental critical elements is suitable, up-to-date and operating as intended." Second it is in respect of notifications of well operations to guarantee that "well design and well control measures are suitable for the anticipated well conditions at all times."

Pursuant to their major accident prevention policy and safety and environmental management system, operators and owners shall be expected to build and maintain strong safety culture and secure the cooperation of workers. This should be done by, inter alia, encouraging and rewarding the report of accidents and near-misses, protection of whistle-blowers and a commitment to tripartite consultation between the competent authority, operators and owners, and workers.[88] Bearing in mind that prevention of harm is a collective task, Clause 2 of Annex IV mandates Member States to ensure cordial industry and competent authority relationships that can create and implement priority plan for "development of standards, guidance and rules

[86] Id., Arts. 19 (3), 11(1)(b), 17 and Annex IV
[87] See Directive 2013/30/EU, Arts.11 (1)(b), 17 and Annex 1, Part 5. The views expressed by the independent verifier and the response to it by the operator must be made available to the competent authority and retained up to six months after completion of the offshore oil and gas operations to which they relate (Art 17(6))
[88] Id., Clause 1 of Annex IV

which will give effect to best practice in major accident prevention" and minimise consequences of major accidents should they still occur.

4.4 Conclusion

The established right of a State to exploit resources within its territory comes with an equal responsibility to prevent pollution resulting in harm to areas outside its jurisdiction. In maritime context this includes harm caused to the high seas. All States have a right to the resources of the high seas and are prohibited from any activity that negatively impacts the environment or hinders any State's lawful use of the high seas.

It is inevitable that when disasters occur steps will be taken to prevent similar reoccurrence. The offshore petroleum industry is not different as major incidents propel both operators and regulators to take steps, including regulatory and technological steps, to prevent major accidents and system failures. This was the case of the regulatory impact of Macondo blowout.[89] The situation is no different within the sea regions of the European Union.[90] However, the extant global legal regime is made of framework provisions that are yet to be supported by concrete treaty on safety and prevention accidental pollution in offshore operations. Except for the EU Directive on offshore safety the regions under consideration are

[89] DNV, *Key Aspects of an Effective U.S. Offshore Safety Regime*, op. cit., p. 2. It is also argued that generally international law is developed as response to disasters, see Comite Maritime International, "The Origins of the CMLA Draft Convention on Offshore Units, Artificial Islands and Related Structures Used in the Exploration for and Exploitation of Petroleum and Seabed Mineral Resources" CMI News Letter, No.1 January/April 2004 p.3

[90] Facts from the development of legislations in aftermath of oil spills involving the Braer, Brent Spar, Erika and the Prestige show that within the EC, just like in many other regions and globally countries seem to learn through accidents, See Kramer, Ludwig, "The Contribution of the European Union to Marine Pollution Prevention" in *Pollution of the Sea – Prevention and Compensation*, Basedow, Jurgen and Magnus Ulrich (eds), Hamburg Studies on Maritime Affairs, Vol.10 (Springer Link) 64 at p.76 (2007)

yet to have updated international treaties on prevention of accidental pollution. But States in those regions that are members of the EU may get the benefits of the Directive.

Though the new instruments are welcomed developments, there is the danger of legislation made in response to a disaster. Such instruments may not adequately address possible future causes of disasters as regulators and draftsmen are most times blinded by the cause of the immediate disaster.[91] Therefore, rather than being reactionary the international community should be proactive through a regulatory regime with risk assessment and management approach with equal focus on the elements of risk, control and condition in the offshore petroleum industry.

Furthermore, for there to be sufficient guarantee of safety of operations and prevention of accidental pollution, operations must be conducted safely throughout the life circle of the installation. This is possible when the design and technical components of the operations are fit for purpose and work as intended and the facility is manned by competent staff that are trained in safety culture. Also, there should be a planned organisational structure that ensures that decisions made and, most importantly, safety procedures are followed as planned.[92] Ultimately, these conditions must be in place throughout the life of the offshore installation from exploration to decommissioning with a close, consistent and sustained monitoring and enforcement of regulations.

[91] DNV, *Key Aspects of an Effective U.S. Offshore Safety Regime*, p.3
[92] Id.

CHAPTER FIVE

EMERGENCY PREPAREDNESS AND RESPONSE TO ACCIDENTAL POLLUTION IN OFFSHORE PETROLEUM OPERATION

5.0 Introduction

Irrespective of the measures that might be put in place to prevent hazards in onshore or offshore petroleum E&P, there is still a likelihood of an accident. This possibility underlines the need to prepare and have effective and adequate response mechanism to take care of any eventuality with the aim of minimizing damage that may result from any accident. Hence, emergency preparedness and response is considered a key aspect of measures at preventing loss of life, injury, damage to properties, equipment and environment, should an incident occur. The operations must be safety conscious as any equipment failure, human error or any other cause could have dire consequences.[1]

The two main areas of consideration are emergency preparedness including contingency planning and response to major accidents. Emergency response, in the sense used in this work, involves the actual deployment of resources, material and personnel to contain the accident and minimise its consequences.[2] It has been observed that most of the safety means used in offshore industry are very much the same irrespective of the legal regime and the follow-up by operators are similar in the different regimes.[3] An effective emergency preparedness and response

[1] Woodcock, Ben and Au, Zachary, *Human Factors Issues in the Management of Emergency Response at High Hazard Installations*, Journal of Loss Prevention in the Process Industries 25 (2013) 547-557, at p.548

[2] Immediate response action has to do with evacuation, escape and rescue, containment of the hazard to minimize the consequences (like pollution control and fire-fighting) and then remediation. See Kaasen, Knut, *Handling of Emergencies: Comparison of the Systems for Emergency Preparedness and Control within the UK and Norwegian Sector of the North Sea*, Scandinavian Institute of Marine L.Y.B. I (1980) p.3.4-3.4; and Alexopoulos, Aristotelis, *International Co-operation and Response Arrangements for Oil Spills and Other Harmful Substances in European Waters: Improving Contingency Plans by Assessing the Risk*, 59 RHDI 763 (2006) at 767

[3] Skogdalen, Jon Espen; Khorsandi, Jahon; and Vinnem, Jan Erik, *Evacuation, Escape, and Rescue Experiences from Offshore Accidents including the Deepwater Horizon*, Journal of Loss Prevention in the Process Industries 25 (2012) 148,153

regulation should provide the necessary parameters for adequate preparedness and effective response to major hazards in offshore petroleum E&P.

This chapter analyses the extant global and regional legal frameworks on emergency preparedness and response with emphasis on their basic components such as contingency planning; equipment and personnel; reporting, notification and information sharing; cooperation and assistance and operations.

5.1 Global Legal Framework on Emergency Preparedness and Response to Accidental Pollution from Offshore Petroleum Operations

The obligation imposed on States by UNCLOS to take steps to prevent, reduce and control pollution of the marine environment from all sources, including installations used in offshore oil and gas E&P, imputes a duty to prepare and respond to maritime accidents that pose a threat of pollution. To fulfil that responsibility, States are to introduce measures designed to minimize to the fullest possible extent pollution from installations and devices used in exploration or exploitation of the natural resources of the seabed and subsoil, especially measures for preventing accidents and dealing with emergencies.[4]

Coastal States are required to respond to emergencies resulting from seabed activities within their jurisdictions. One way of doing it, in addition to other measures that may be necessary, is the enactment of laws and regulations aimed at preventing such accidents. The laws, regulations and measures should at least be up to international standards and reviewed from time to time as circumstances may demand. States are expected to cooperate to adopt global

[4] UNCLOS, Art.194(3)(c)

and regional rules, standards, practice and procedure, using the instrumentality of competent international organisations like the IMO.[5]

Given its framework nature UNCLOS was not designed to provide such international standards and criteria for emergency response. The 1989 International Convention on Salvage[6] is applicable to vessels in danger in navigable waters[7] but expressly excludes MODUs and other offshore oil and gas installations.[8] The binding global instrument on emergency preparedness and response for offshore petroleum operations is the 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC).

The OPRC recognised the serious threat posed to the marine environment by oil pollution incidents involving not only ships but also offshore units. To this end, the importance of precautionary measures and prevention in avoiding oil pollution in the first instance was noted in addition to the need for strict application of existing international instruments dealing with maritime safety and marine pollution prevention.[9] Though most international instruments on marine pollution like the MARPOL 73/78 relate more to safety of shipping and prevention of pollution from vessels, emphasis is placed on international cooperation with the application of the principle of common but differentiated responsibility in favour of developing countries.

Fundamentally, mutual assistance, exchange of information about response capabilities of States, report of incidents of significance that is capable of causing marine pollution and preparation of pollution contingency plan are important elements of emergency response recognized by the OPRC.[10] The next sections examine the extent to which binding global

[5] UNCLOS, Art.208
[6] IMO/LEG/Conf.7/27, 2 May 1989 in force 6 September 1991
[7] International Convention on Salvage, Arts.1(a-d)
[8] Id., Arts.1(a-d)&3
[9] Id, preamble
[10] Id., para. 6 of the preamble

instruments provide for these basic elements of emergency preparedness and response to accidental pollution from offshore petroleum E&P activities.

5.1.1 Contingency/Emergency Planning

Contingency planning is regarded to be the most important part of preparing for emergency situations.[11] It involves taking precautionary measures needed to deal with eventualities. Some argue that emergency preparedness should be based on the incorporation of "best practice" guidelines and technical information to develop innovative techniques, and a national contingency plan should be based on risk assessment of potential incidents.[12]

The OPRC requires each State to ensure that offshore units[13] engaged in oil and gas E&P under its jurisdiction have oil pollution emergency plans which should be coordinated with a national emergency system.[14] A similar provision is in UNCLOS which imposes obligation on States to "jointly develop and promote contingency plans for responding to pollution incidents in the marine environment."[15] Also, States are to cooperate globally and regionally and with the IMO, within their capabilities and to the extent possible to eliminate the effects of pollution and prevent or minimise the damage.[16]

The OPRC makes it mandatory for States to establish national systems that incorporate national contingency plan to respond to accidental pollution promptly and efficiently. Also, the establishment of competent authorities vested with the responsibility for preparedness and response to oil pollution. Such national systems are to provide for an operational contact point

[11] Kaasen, Knut, supra note 2 at p.3.7
[12] Alexopoulos, A., supra note 2, p. 768
[13] Art.2(4) defines 'offshore unit' to mean "any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation or production activities, or loading or unloading of oil"
[14] Id., Art.3(2)
[15] UNCLOS, Art.199
[16] Id., Arts. 198 and 199

responsible for receiving and dealing with pollution reports, have the authority to request for assistance from other States and take decisions to render help when requested by another State.[17] As a monitoring measure, States are to give the IMO up-to-date information on the level of preparedness and activities of the national system at all times.[18]

5.1.2 Response Equipment and Personnel

Having a contingency plan for emergency preparedness and emergency response is not a guarantee that there would be effective response to accidents by all States and in all regions. A successful response system to accidental pollution relies on the availability of oil spill combating equipment and trained personnel.[19] In addition to equipment such as vessels, aircrafts and other pollution combat equipment that are external to the platforms and installations engaged in the operations, the design of the platform and installations is also important. The design must be in a manner that eases evacuation, rescue, escape and abandonment. Personnel must be trained to act safe in all circumstances, following safety directive while there must be a clear command structure to be adhered to in an emergency with the incident commander taking charge of response operations.[20] To this end, drilling exercises should be organised to keep personnel alert and practically conversant with response procedure and use of equipment.

However, not every region and country may have adequate equipment and personnel to contribute and respond to emergencies. The OPRC in recognition of this fact mandates States

[17] OPRC, Art.6(1)
[18] Id., Art.6(3)
[19] OPRC, paras 4 and 5 of the preamble,
[20] On detailed analysis of human factor in emergency preparedness and response see Woodcock, Ben and Au, Zachary, supra note 1. According to the commentators much of emergency response process is human activity.

to cooperate and extend differential treatment to developing countries in various aspects of preparedness including financial and technical assistance, equipment and training.[21]

Noteworthy, UNCLOS provides that States should directly or through competent international organisations extend assistance to developing States through training of scientific and technical personnel, supply of relevant response equipment and facilities and also enhance the capacity of developing States to manufacture such necessary equipment.[22] In similar vein, international organisations are required to grant preferential treatment to developing States in the allocation of funds and technical assistance and the use of specialized services they provide for the purpose of prevention, reduction and control of marine pollution or minimization of its effects.[23]

The IMO is designated under the OPRC to facilitate the implementation of some of its provisions, especially information services and management, education and training, technical services and training with particular attention given to the needs of developing countries.[24] The response to two major accidents that occurred at offshore Nigeria in the Gulf of Guinea in December 2011 (Bonga Oil Field)[25] and January 2012 (Chevron's Endeavour fire)[26] questions the level of implementation of these provisions. Facts about the consequences of the spill and the emergency response efforts in both cases are less known when compared to the April 2010

[21] This is reflected in Art.12 of the convention, Clause (3) of the Annex, Conference Resolution 5 on Establishment of Oil Pollution Combating Equipment Stockpiles and Conference Resolution 6 on Promotion of Technical Assistance
[22] UNCLOS, Art.202(a)(i),(iii)&(iv)
[23] Id., Art.203
[24] OPRC Arts.12 and 2(6)
[25] The Telegraph, *Shell oil spill off Nigeria likely worst in a Decade*, available at http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/8974141/Shell-oil-spill-off-Nigeria-likely-worst-in-a-decade.html accessed on 15 November 2013; Platform, *Shell's Bonga oil spill hits Nigerian communities*, available at http://platformlondon.org/2012/01/04/shells-bonga-oil-spill-hits-nigerian-communities/ accessed on 15 November 2013
[26] Ring of Fire, 'Chevron Hit with $5 Billion Suit for Deadly Nigerian Gas Rig Explosion' 15 January 2014 http://ringoffireradio.com/2014/01/chevron-hit-5-billion-suit-deadly-nigerian-gas-rig-explosion/ last visited 22 August 2015; see also OilPrice, *The Shocking Truth Behind Chevron's Gas Rig Fire off the Coast of Nigeria*, available at http://oilprice.com/Energy/Natural-Gas/The-Shocking-Truth-Behind-Chevrons-Gas-Rig-Fire-off-the-Coast-of-Nigeria.html accessed on 15 November 2013

Macondo blowout. There seems to be no record of implementation of these provisions on differential treatment on emergency preparedness and response with recorded success in developing countries and regions.

5.1.3 Reporting, Notification and Information Sharing

Notification of pollution accidents that create an imminent danger or actual damage is an important facet of cooperation for emergency response. Where States which are likely to be affected are not informed, it is difficult to expect a prompt and effective response. There is therefore a duty imposed on States to notify any other State that might be affected by pollution incidents from their territories. In addition, notification about such incidents must also be given to competent international organisations.[27]

Some more specific commitments on reporting and notification are included in the OPRC. For instance, the operators of offshore units are obligated to report every incident of discharge or probable discharge of oil to the State in which they operate.[28] Such State must consequently assess the nature, extent and possible impacts of the pollution. Where, by the assessment, the pollution incident could have a transboundary nature the State in question must promptly notify other States whose interests or territory may be affected. Such notification should be accompanied by details of the assessment, action already taken and any intended action and such other information that may be necessary.

However, a decision to inform or not to inform the competent international organisation is dependent on the severity of the incident.[29] Where it is severe, the IMO shall be informed by

[27] UNCLOS, Art.198
[28] OPRC, Art. 4(1)(a)(ii). In the case of a ship, report shall be made to the nearest coastal State.
[29] Id., Art.5(1)

the State directly or through relevant regional organisation with details of the assessment and actions already taken or intended action by the State.[30] While reporting to the IMO of incidents involving ships at sea might be appropriate, one may doubt the rational and or relevance for such notification of the IMO when it is a major hazard incident such as a blowout in offshore petroleum installation.

The notification paves way for a possible cooperation for collective response to the incident and provision of assistance where needed. The failure of the OPRC to provide specific duration for the required notifications might affect the success of any response operation as time is of the essence in an emergency.

5.1.4 Cooperation and Assistance

At the international level, a foundation on which emergency preparedness and response to accidental pollution in the marine environment rest is cooperation. Section 2 of Part XII of UNCLOS emphasises the need for international cooperation.[31] Similarly, the OPRC imposes an obligation to cooperate through the provision of advisory services, technical support and equipment in response to an oil pollution incident. This is expected when the severity of the incident so demands and upon request from a party affected or likely to be affected by the pollution.[32] Responsibility is on the party that requests for assistance to facilitate the arrival, utilization and departure of all equipment and personnel engaged in the response activities and also ensure their expeditious movement into, through and out of its territory.[33]

[30] Id., Art.5(2)&(3)
[31] The section urges global and regional cooperation in notification, contingency plan development, studies, research, exchange of information and data, and scientific criteria for regulations
[32] OPRC, Art.7(1)
[33] Id., Art.7(3)

Though a State may request the IMO for help in identifying sources of interim financing of response cost, the financial cost of assistance given in response to a request shall be borne by the party that requested for assistance, subject to prior agreement of the Parties.[34] Where the assistance was unsolicited, the assisting party shall bear the cost of its action.[35] Irrespective of the motive of this provision, the unqualified nature of it is likely to discourage friendly States from rendering prompt and adequate assistance to prevent and control pollution from offshore accidents when they are not guaranteed reimbursement of their expenses.

To encourage genuine voluntary assistance when circumstances call for it, at least, reimbursement of expenses in cases where the voluntarily assisting State actually recorded some level of success in minimizing damage to the marine environment would be fair. This is purely in the interest of the protection of the marine environment which is of great importance to the international community. An example of such consideration is found in Article 14 of the 1989 International Convention on Salvage which was adopted to modify the 'no cure, no pay' rule[36] of salvage law to enable salvors get special compensation that is, at least, equivalent to their expenses in situations where damage to the environment was prevented or minimized but the ship and cargo in peril were not saved.

Cooperation is also demanded in research and development relating to "enhancement of state-of-the-art oil pollution preparedness and response, including technologies and techniques for surveillance, containment, recovery, dispersion, clean-up and otherwise minimizing or mitigating the effects of oil pollution, and for restoration."[37] Similar cooperation on studies,

[34] Id., Art.7(1)&(2), Clause 1(a)(i)&(b) of the Annex
[35] Id., Clause 1(a)(ii) of the Annex
[36] Under the 'no cure no pay' rule irrespective of the effort and expense put into a salvage operation, where they fail to save ship and cargo of value, the salvor would receive no pay.
[37] OPRC, Art.8

research and the exchange of information and data acquired in the process is provided under UNCLOS.[38]

Though the Parties to OPRC agreed to give technical assistance in terms of personnel training and make available relevant technology, equipment and facilities to States that may be in need, the transfer of technology is not guaranteed by the OPRC as it is subject to the national law of the State.[39] This is a major setback to the Convention in terms of increased global capacity building. These provisions were adopted in 1990, at a time concerns were centred on responding to pollution incident involving oil tankers following the Exxon Valdez incident off the coast of Alaska in 1989. These provisions of the OPRC are not specifically tailored to offshore petroleum E&P emergency response situations and as such may not adequately address the peculiar circumstances of offshore E&P.

A number of offshore incidents resulted in fire that puts the installation at risk of total loss. Offshore E&P installations have high number of persons on board that would need to be rescued to safety. Ability to respond timely is therefore crucial. For instance, based on the lessons of Macondo incident HELCOM adopted in 2010 Recommendation 31/1 on "Development of National Ability to Respond to Spillages of Oil and Other Harmful Substances"[40] to improve on response time. Also, killing the well to stop continued escape of oil is very important. The availability of technology, equipment and personnel to do it should not be hindered by national laws. Conditions for assistance and technology transfer would need to be liberalised by amendments to the OPRC and through regional agreements.

[38] UNCLOS, Art.200
[39] OPRC, Art.9
[40] Adopted on 4 March 2010 in line with Article 20(1)(b) supersedes HELCOM Recommendations 1/7, 4/3 and 11/13 and is an improvement on the time line set in Recommendation 19/17 of 1998

5.1.5 Emergency Response Operations

Although issues regarding reporting, notification and information sharing; cooperation and assistance; and equipment and personnel discussed above are essential to emergency response, the actual response operations at the moment of a major accident will to a great extent determine the success of any contingency planning. The steps taken by the operator, regulator and third parties to combat major accident and prevent or minimize its impact on personnel, installations, the environment and other related interests is the main determinant of the effectiveness of emergency response.

Once there is a major hazard on an offshore installation there will be evacuation, escape and rescue operation which would be focused largely on the safety of personnel on board the installation. Evacuation is the planned method of leaving the offshore installation without directly entering the sea. This involves the transfer of personnel to a safe location onshore or offshore or to a vessel through the use of helicopters, lifeboats and or bridge-links. In the event that the evacuation method or system fails, personnel may be able to leave the installation by way of an escape. This may involve entering the sea directly through the use of items such as life rafts, chute systems, ladders and throw-over life rafts as a 'last resort' means of taking personnel off the affected installation to safety. These items form part of emergency equipment and should be in good condition and readily available.

Rescue is the recovery of persons who were successfully evacuated or escaped from the offshore installation and other persons near the installation to a place of safety. It also refers to the process by which man overboard (MOB) survivors are taken to a safe place where medical

help is available.[41] The emergency response operation must always consider the risk influencing factors (RIF)[42] in the circumstance of the accident and or hazard.

Some times in the course of evacuation, escape and rescue, the personnel on board the offshore petroleum installation may be confronted with physical constraints relating to the design of the installation, its malfunction or failure. Also, there could be command inadequacies in terms of procedure, communication and possible breakdown of safety management systems;[43] and control and behavioural hazards intrinsic to the personnel as humans.[44] UNCLOS and the OPRC did not take into cognisance such factors and eventualities. The OPRC may be amended to create obligation for national regulations to take into consideration these circumstances to achieve minimal casualties in any major accident offshore.

A successful evacuation, escape and rescue operation ultimately leads to an abandonment of the offshore installation by personnel. Once the personnel have been taken to safety, emergency response would then be concerned with efforts to contain the hazard and save the installation from serious or total loss as well as minimise damage to the marine environment and related interests.

Some response might require the drilling of relief wells, closing of valves or cementing the well depending on the type of incident. Oil released would have to be cleaned up and prevented from getting ashore, using various methods and processes in line with best practice. The international regulatory framework should provide for the necessary parameters of best practice

[41] Skogdalen, J. E., et al, supra note 3 at p.149
[42] RIF is "an aspect (event/condition) of a system or an activity that affects the risk level of this system or activity" see Oien, K., 'Risk Indicators as a Tool for Risk Control', Reliability Engineering and Systems Safety, 74, 129-145 (2001), quoted in Skogdalen, Jon Espen, et al, supra note 3, p.149
[43] In the Vermillion Block incident of 2 September 2010, a fire stated on board the Vermillion 380 platform in the Gulf of Mexico 102 miles of the coast of Louisiana. Though all 13 worker on board the platform survived by jumping into the water in an escape action, investigation revealed that the crew failed to act in accordance with regularly practiced and drilled procedures. See Woodcock, Ben and Au, Zachary, supra note 1, at pp.548-549.
[44] Skogdalen, J. E., et al, supra note 3, at pp.149-153; see also Woodcock, Ben and Au, Zachary, supra note 1, pp 547-557

for adequate preparedness and effective response to emergency incidents.[45] A global or regional instrument should provide such necessary guidelines that stipulate minimum standards to be applied globally by all operators. Notwithstanding, the seeming differences in regulatory regimes, be it prescriptive or performance based, it has been observed that most of the response approach, including safety equipment used in offshore installation are very much the same. Also follow-up by operators are similar in the different countries and regions with different regulatory regimes.[46]

There are circumstances when the requirements for oil installations may conflict with maritime regulations required of vessels and are applicable to MODUs that have dual status as vessels and offshore oil and gas drilling installations. This is already playing out in Norway where new regulations require new production installations to use free-fall life boats in Norwegian waters but MODUs do not follow the legislation but maritime regulations.[47] In such circumstances MODUs should be compelled to follow the offshore industry regulation where they are stationed and involved in E&P activities. A regulation beyond the State level should be able to compel compliance to create uniform application in the industry.

5.2 Regional Legal Regimes on Emergency Preparedness and Response in Offshore Petroleum E&P

A focus of the international regime on emergency response to accidental pollution from offshore petroleum E&P should be the establishment of regional regulations, emergency preparedness in terms of personnel and equipment and assistance in taking response action.

[45] Alexopoulos, A., supra note 2, p. 768
[46] Skogdalen, J. E., et al, supra note 3, p.153
[47] Id., p.156

In the North-East Atlantic, the OSPAR Convention does not contain detailed provisions on emergency response. Annex III on prevention and elimination of pollution from offshore sources does not address the issue of emergency response, especially from offshore oil and gas E&P. Instead, where an incident occurs and transboundary pollution is envisaged, affected parties are expected to consult and negotiate a cooperation agreement to contend with the pollution.[48] One negotiated cooperation agreement is the 1983 Agreement for cooperation in dealing with pollution of the North Sea by oil and other harmful substances (Bonn Agreement)[49] which is applicable whenever there is grave and imminent danger of pollution of a transboundary nature.[50]

The Bonn Agreement provides the mechanism for the North Sea countries and the European Community to help each other in contending with pollution in the North Sea Area from maritime disasters and prolonged pollution from ships and offshore installations. Parties to the agreement engage in surveillance as a method of detecting and combating pollution at sea.[51] However, it appears not to make a case for urgent response to accident in offshore petroleum E&P activities.

In the Mediterranean Sea, the 2002 Protocol Concerning Cooperation in Preventing Pollution from Ship and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (Prevention and Emergency Protocol)[52] is largely focused on pollution from ships and emergency resulting therefrom.[53] Though it did not define 'ship' to enable unambiguous determination of whether offshore oil and gas installations are regarded as ship under the

[48] 1992 OSPAR, Art. 21.
[49] Bonn Agreement, available at http://www.bonnagreement.org/eng/html/welcome.html accessed on 25 May 2012
[50] Bonn Agreement, Art. 1
[51] Id., see generally Arts. 3 – 9 of the Agreement on issues of surveillance, notification, assistance and finance of response operations
[52] Entered into force on 17 March 2004
[53] 2002 Prevention and Emergency Protocol, Art.3(1)(a) and the title of the protocol suggests so

Protocol, the definition of 'pollution incident' in Article 1(b)[54] and the obligation created by Article 3(1)(b)[55] suggest that the Protocol could be applicable to offshore oil and gas operations. In fact, it is mandatory for persons having charge of offshore installations to report by 'rapid and adequate channels' all incidents that resulted or may result in discharge of oil or hazardous and noxious substances in accordance with reporting procedures established by the Offshore Protocol.[56] Also, Article 11 of the Prevention and Emergency Protocol provides for emergency measures to be taken on offshore installations, on-board ships and in ports.

In practical terms the Prevention and Emergency Protocol must apply to all incidents of marine emergencies. For instance, the Regional Maritime Pollution Emergency Response Centre (REMPEC) for the Mediterranean Sea states that the 2002 Prevention and Emergency Protocol is the basic legal framework for the region's cooperation in "dealing with threats to the marine environment, the coasts and related interests of the Contracting Parties posed by accidental releases or by accumulations of small, operational discharges, of oil or other harmful substances".[57]

In the Baltic Sea region States must take all measures to not only prevent pollution but also ensure prompt response actions against pollution incidents.[58] They are to do their best to maintain adequate ability and actually respond to pollution incidents to eliminate or minimize

[54] According to Art.1(b) 'pollution incident', means an occurrence or series of occurrences having the same origin, which results or may result in a discharge of oil and/or hazardous and noxious substances and which poses or may pose a threat to the marine environment, or to the coastline or related interests of one or more States, and which requires emergency action or other immediate response
[55] Art 3(1) provides that "The Parties shall cooperate: (a) to implement international regulations to prevent, reduce and control pollution of the marine environment from ships; and (b) to take all necessary measures in cases of pollution incidents."
[56] Id., Art.9(4)
[57] See REMPEC, *Regional Legal Framework* available at http://www.rempec.org/rempec.asp?pgeVisit=New&theID=6 accessed on 8 October 2013
[58] Helsinki Convention, Art.12(1)

the consequences of such incidents. This could be done individually or in conjunction with other States in the region.[59]

Under the EU Directive on offshore safety, operators and owners are, in accordance with Union best practice, "encouraged to establish effective corporate safety and environmental policies and to give effect to them in a comprehensive safety and environmental management system and emergency response plan."[60]

The following sections would consider the various aspects of emergency preparedness and response as provided for under various regional instruments.

5.2.1 Contingency/Emergency Plan

In the Mediterranean Sea region States, individually or in partnership with other parties, must have in place contingency plan and other means of emergency response.[61] The emergency measures should require all ships to have on board a pollution emergency plan with obligation to follow the procedures stipulated in the said emergency plan and where need be request for assistance from REMPEC. In relation to offshore installations, operators shall be required by parties in which jurisdiction they operate to have contingency plans to combat any pollution incident, coordinated within a national emergency plan and other procedures that shall be established by the competent national authority.[62]

[59] Id., Art.14
[60] Id., para.26 of Preamble
[61] 2002 Prevention and Emergency Protocol, Art.4. The requirement for the use of 'other means' gives a wide latitude on what states may do to respond to emergency, including but not limited to "equipment, ships, aircraft and personnel prepared for operations in cases of emergency, the enactment, as appropriate, of relevant legislation, the development or strengthening of the capability to respond to a pollution incident and the designation of a national authority or authorities" responsible for the implementation of the Protocol. This wide latitude is interterm with the general provision set out in Article 3(1)(b) that requires parties to cooperate "to take *all necessary measures* in cases of pollution incidents". (Emphasis mine)
[62] Id., Art.11(5)

The 1994 Offshore Protocol requires operators in charge of installation to have contingency plan to combat accidental pollution in coordination with the national contingency plan of the country established pursuant to and in accordance with the Emergency Protocol which is applicable *mutatis mutandis* to issues covered by the Offshore Protocol.[63]

Furthermore, coordination for development and implementation of contingency plan is to be established by the Parties in line with guidelines established by the competent international organisation.[64] Curiously, the Protocol did not describe such competent international organisation. Article1 only defined "Organisation" to mean the United Nations Environment Programme (UNEP) as indicated in Articles 2 and 17 of the Barcelona Convention. The detailed provisions on requirement of the operator's contingency plan and national coordination and direction in an emergency are provided for in Annex VII of the Offshore Protocol.

A fundamental requirement of a contingency plan under the Offshore Protocol is that it must involve the use of what is "most appropriate" in terms of alarm, methods, techniques and equipment.[65] Where the incident may cause significant adverse effect, the competent authority shall ensure coordination of both the national contingency plan and that of the operator. Such coordination must be done through control of the response process, including intervention by technical experts and trained personnel with the necessary equipment and materials.[66]

[63] Offshore Protocol, Art.16(1)&(2); Art.3 of the Emergency Protocol creates the obligation for contingency plan which was improved upon by Arts.4&11 of the Prevention and Emergency Protocol
[64] Id., Art.16(3)
[65] The requirement for a standby boat or vessel is of great value. This was acknowledged by the United States Coast Guard following the role played by the supply ship, the Damon B. Bankston in rescuing from water some crew members of Deepwater Horizon who had abandoned it in the aftermath of the blowout and fire. Unfortunately, having a standby vessel or having a fast rescue craft was not a requirement for MODUs under US regulations; see *Report of Investigation into the Circumstances Surrounding the Explosion, Fire, Sinking and Loss of Eleven Crew Members Aboard the Mobile Offshore Drilling Unit Deepwater Horizon in the Gulf of Mexico April* 20-22, 2010,United States Coast Guard, Redacted Volume I p.63 (2011) (hereafter called Deepwater Horizon USCG Report 2011); Skogdalen, J. E., et al, supra note 3 at p.155-156 noted this point made by the U S Coast Guard
[66] See Regulation B, Annex VII of Offshore Protocol

Similarly, in the Baltic Sea region, States are required to have national contingency plans and where appropriate, develop bilateral or multilateral plans for a combined response to pollution incidents.[67] It is obligatory for all offshore units to have an approved pollution emergency plan in accordance with the procedure established by the appropriate national authority.[68] The plan must contain a list of prepositioned equipment, information on alarm and communication systems, a description of the measures to be taken in different types of pollution incidents and the organization of response measures. Before the installation is put into use, the pollution emergency plan should be appropriate and relevant to the installation's operation and user friendly. This is very important as the provision of equipment might become irrelevant in the time of response operation if it is not user friendly and appropriate to the installations concerned. For instance, in the Deepwater Horizon, the report of the investigation of the US Coast Guard found that the lifeboat design was not appropriate in the circumstance. For example, among other issues, it "was not conducive to receiving an injured crew member on a stretcher".[69]

Furthermore, the Offshore Protocol requires the development of the said emergency plan to take into account the risk assessment relating to the operation of the offshore installation and harmonised with the national contingency plan.[70] In addition to contingency plan, States have obligation to put in place surveillance activities to monitor offshore operations and ensure timely reporting of incidents.[71]

[67] Helsinki Convention, Regulation 2 of Annex VII
[68] Id, Regulation 7 of Annex VI
[69] Deepwater Horizon USCG Report 2011, p.57
[70] See Clause 1(a) and (b) of HELCOM Recommendation 19/17 on "Measures in order to Combat Pollution from Offshore Units", adopted on 24 March 1998 pursuant to Article 13(b), and Regulation 2 of Annex VI of the Convention. The recommendation recalls Article 12 of the Convention, Regulation 7 of Annex VI and Regulation 2 of Annex VII of the 1992 Helsinki Convention dealing with adequate preparedness and prompt response action
[71] Helsinki Convention, Regulation 3&5 of Annex VII

A similar trend can be detected in the EU Directive on offshore safety, although it is much more detailed and contains stricter requirements. Under the Directive, to ensure effective response to emergencies, operators should prepare internal emergency response plans[72] in accordance with Article 28 of the Directive. The Response Plan must be site specific and take into consideration major accident risks assessment and hazard scenarios identified in the report on major hazards. Also, it should include an analysis of the oil spill response effectiveness.[73] The response plan must be submitted to the competent authority in line with Article 11(1)(g) and the operator must maintain necessary resources for prompt execution of those plans. Where the particular nature and location of a well necessitates an amendment to the internal emergency response plan, the amended one or an adequate description of it must be submitted to the competent authority to complement the relevant notification of well operations.[74]

Hence, it is important that the owner's internal emergency response plans for installations in the case of mobile offshore drilling units are amended as and when necessary to be applicable to a given new location and well based on identified risk and scenarios in the major hazards report. Perhaps based on the lessons of Macondo blowout and circumstances that left 11 crew members of the Deepwater Horizon dead, the Directive requires the internal emergency response plan of the operator to be "integrated with other measures relating to protection and rescue of personnel from the stricken installation so as to secure a good prospect of personal safety and survival".[75]

Beyond the operators and owners of offshore oil and gas installations, States are to put in place external emergency response plans in accordance with Annex VII of the Directive on offshore

[72] By Art.2(28) 'internal emergency response plan' "means a plan prepared by the operator or owner pursuant to the requirements of this Directive concerning the measures to prevent escalation or limit the consequences of a major accident relating to offshore oil and gas operations"
[73] EU Directive 2013/30/EU, Art.14(1) and 28(1)
[74] Id., Art.14(2)
[75] Id., Art.28(4)

safety[76] covering all offshore oil and gas installations and connected infrastructure within their jurisdiction. The external emergency response plans must take into consideration the latest internal emergency response plan of existing or planned installations and connected infrastructure and be done in cooperation with the operators, owners and or licensees and the competent authority.[77] At the request of a member State, the European Maritime Safety Agency (EMSA) may assist the Commission in assessing the external emergency response plans of that State to ascertain their conformity with the Directive. The Agency may also help the State review exercises aimed at testing transboundary and Union emergency mechanisms.[78]

5.2.2 Equipment and Personnel

The Offshore Protocol of the Mediterranean Sea region makes control of pollution one of the principal commitments of the Parties.[79] As part of safety measures they are to ensure that at all times the operator has on the installations adequate equipment and devices, maintained in good working order, to protect human life, prevent and combat accidental pollution and facilitate prompt response to an emergency, in line with the best available environmentally effective and economically appropriate techniques and the provisions of the operator's contingency plan.[80]

To ensure effective response by personnel it is necessary to undertake periodic emergency exercises.[81] Without understanding the workings and procedure of safety equipment, their availability might be rendered useless in time of need. For instance, in the case of the

[76] Id., Art.2(36) defines 'external emergency response plan' to mean "a local, national or regional strategy to prevent escalation or limit the consequences of a major accident relating to offshore oil and gas operations using all resources available to the operator as described in the relevant internal emergency response plan, and any supplementary resources made available by the Member States"
[77] Id., Art.29(1)-(3)
[78] Id., Art.10(3)
[79] Offshore Protocol, Art.3
[80] Article 15(2)
[81] Id., Regulation A(1) of Annex VII

Deepwater Horizon, the crew failed to efficiently operate the MODU's liferaft launching appliance and components. But for the timely intervention of the vessel Damon B. Bankston occupants of the liferaft may have been consumed by the fire.[82]

In the Baltic Sea, States are to maintain the ability to respond to incidents by having in place adequate equipment, ships and manpower prepared for pollution combat. But there is no guarantee that response from member States would be of the same standard in all waters of the region as parties can only cooperate in responding to pollution incidents within their capabilities, relevant resources available and when the severity of the incident so justify.[83]

However, to build capacity, it is recommended that States maintain national inventories on emergency capacity that are continuously updated and "establish national training and exercise programme to ensure effectiveness of emergency capacity".[84] This emergency combat equipment must meet certain requirements. For instance, oil recovery system must be designed to operate under wave heights/velocity prevailing in the waters involved and prevailing temperature conditions in a blowout situation and those for ice conditions must be tested for that purpose.[85] The location of the emergency combat equipment must be clear, stored and maintained to ensure that combat measures can be taken promptly".[86]

In the North-east Atlantic, the Bonn Agreement in recognition of the importance of well trained and alert personnel provides guidelines for member States to undertake three types of joint exercises. These are the alarm exercise, equipment exercise and operational exercise with focus on alarm procedure, response capability and response time.[87]

[82] Deepwater Horizon USCG Report 2011, p64
[83] Helsinki Convention, Regulation 1(1)&(3) of Annex VII
[84] HELCOM Recommendation 24/9 on "Ensuring Adequate Emergency Capacity", adopted on 25 June2003 in response to Article 20 paragraph 1(b) of the Helsinki Convention.
[85] HELCOM Recommendation 19/17, Clause 1(g)
[86] Id., Clause 1(c)&(i)
[87] Bonn Agreement, Counter Pollution Manual, Chapter 7: *Exercises*, Clause 7.5

Under the EU regime, Member States are required to make it mandatory for operators and owners of offshore oil and gas installations to maintain equipment and expertise relevant to the internal emergency response plan. Such maintained equipment and expertise should be available at all times and made available as and when necessary to the authorities responsible for the execution of the external emergency response plan of the Member State.[88] In terms of personnel, Member States must regularly carry out drills to test their preparedness to respond effectively to major accidents in collaboration with Member and Non-Member States potentially affected by the offshore oil and gas operations and Union agencies. The Commission may make contributions where exercises are directed at testing mechanism for transboundary emergency response.[89]

As part of the EU emergency preparedness and response plans the EMSA has built a Network of Stand-by Oil Spill Response Vessels, maintained through annual procurement procedures since 2005, but the vessels are used in line with the principle of 'subsidiarity'. Thus, Member States are primarily responsible for response to pollution incidents in their waters and have the EMSA response resources under their operational control upon request for assistance. The Network of pollution response vessels is given to requesting States through the Monitoring and Information Centre (MIC) of the European Commission in Brussels.[90]

[88] EU Directive 2013/30/EU, Art.28(2)
[89] Id., Art.31(5)
[90] The service is said to be cost efficient, and is based on ensuring the availability of commercial vessels like bunker and product tankers to carry out at-sea oil recovery services following a request for assistance from a coastal State. The Network utilises 'state of the art' large scale at-sea oil recovery technology. Vessels are 'pre-fitted' and certified for oil recovery operations by an appropriate Classification Society. Following a spill, and a request for assistance from an affected State, a vessel ceases its normal commercial activities and is transformed rapidly into a fully operational spill response vessel; see EMSA, Annual Report 2012, page 4, available at http://emsa.europa.eu/emsa-documents/latest/77-documents/143-annual-reports.html accessed on 18 November 2013

5.2.3 Cooperation and Assistance

The need for cooperation and assistance in response to major hazard incident in offshore E&P cannot be over emphasised and is reflected in some regional agreements. Under the Bonn Agreement, the North Sea is divided into zones and each party is responsible for a zone with a duty to observe every oil incident, give situation report to other members and the necessary measure to address it.[91] The Parties have right to call for assistance when confronted with pollution emergencies and when requested are equally under obligation to respond and render help to a party in need.[92]

In the Mediterranean region, the Parties by the provisions of the Barcelona Convention are obligated to "cooperate in taking necessary measures for dealing with pollution emergencies" in order to reduce or eliminate damages resulting from marine accidents.[93] Its Emergency Protocol calls for cooperation in taking action in respect of 'grave and imminent danger' to marine environment "due to the presence of massive quantities of oil or other harmful substances resulting from accidental causes".[94] The Emergency Protocol applies to pollution from "oil or other harmful substances resulting from accidental causes" involving offshore oil and gas installations. It confers the right on States to call for assistance when in need and a corresponding obligation to render such assistance when requested.[95]

Similar provisions on assistance to deal with pollution are contained in the 2002 Prevention and Emergency Protocol.[96] Under this Protocol, while any State party may call for assistance from another party, it must first ask States that are likely to be affected by the pollution. States

[91] OSPAR, Bonn Agreement, Art.6
[92] Id., Art.7
[93] Barcelona Convention, Art. 9
[94] 1976 Emergency Protocol, Art.1
[95] Id., Art.10
[96] 2002 Prevention and Emergency Protocol, Art.12. This replaced the 1976 Emergency Protocol upon entering into force in 2004 by virtue of its Article 25.

could request for expert advice, required specialised personnel, products, equipment and nautical facilities directly or through REMPEC. Those that have been asked for assistance must use their best endeavour to render assistance.[97] Cooperation in recovery operations seems not to apply to accidental pollution in offshore petroleum E&P. It is specific to salvaging hazardous and noxious substances in packaged form, including containers, tanks and like items from the sea.[98]

The question is what happens if a State refuses to render the assistance requested? Can a State that has the required assistance be compelled to render the assistance to any Member State that requests? The Protocol makes no provision for enforcement of these provisions. Perhaps, in view of the fact that all member States in the region may be affected by any major hazard, they would be willing to combat emergency to not only assist the asking State but also protect their own interests.

The Offshore Protocol provides that in an emergency a State may ask another State for assistance directly or through REMPEC. Countries who are parties to the 1976 Emergency Protocol are to apply the pertinent provision of that protocol.[99] However, considering the highly risky nature of offshore oil and gas operations, Contracting Parties are mandated to cooperate in developing newer and better ways of responding to emergency through scientific and technological research.[100]

To build capacity among all countries of the Mediterranean Sea region, developed countries in the region are to put in place programmes to assist developing countries in science, law, education and technology relating to prevention, combat and control of pollution.[101] A broader

[97] Id.
[98] Id., Art.6
[99] Offshore Protocol, Art.18
[100] Id., Art.22
[101] Id., Art.24

and unrestricted cooperation is expected on the part of the operator who is at liberty to get necessary assistance from any capable organisation or entity when an emergency creates a risk beyond its capability.[102]

In the Baltic Sea region these issues are governed by provisions on requirements, procedure and conditions for assistance similar to those contained in the OPRC.[103] The Helsinki Convention provides for cooperation in taking appropriate measures for emergency preparedness and response to pollution incidents with the details provided in Annex VII on response to pollution incident.[104]

In the European Union waters, Directive 2013/30/EU[105] requires a methodical and planned cooperation among Member States and also between Member States and offshore oil and gas operators. They are to share compatible emergency response expertise and assets as a way of making emergency response and contingency planning for major accidents more effective. Where suitable, the planning and responses should also make use of the existing resources and assistance available from within the Union, in particular through EMSA. Member States could also request additional assistance from the Agency through the Union Civil Protection Mechanism.[106] While operators should be made to cooperate with relevant authorities of the State on regular drill and test of their preparedness for effective response to major accident it is the duty of a State to ensure that the competent authority develop cooperation scenarios for emergency.[107]

[102] The cooperation could be with other operators or 'entities capable of rendering necessary assistance'. Perhaps this could include companies undertaking salvage operations. See Offshore Protocol, Regulation A (2) of Annex VII.
[103] Helsinki Convention, Regulation 8&9 of Annex VII
[104] Id., Art.14
[105] The Directive covers various portions of about four marine regions identified in Article 4(1) of Directive 2008/56/EC, namely the Baltic Sea, North-east Atlantic Ocean, the Mediterranean Sea and the Black Sea; see EU Directive 2013/30/EU, Para. 50 of the Preamble
[106] Id., Para.48 of the Preamble
[107] Id., Art.29(6) and (7)

5.2.4 Reporting and Notification

Reporting and notification are two related obligations which reflect customary obligation/duty of notification in international environmental law. Reporting requirements are usually imposed on the operator of an offshore installation to keep the regulator and other relevant institutions informed of occurrences both in terms of compliance with regulations and incidents in the course of operations. Notification is used mainly in respect of an operator or State's obligation to inform or intimate other States, regional bodies and organisations of the occurrence of a major hazard or accident in the operations and any development that may affect them adversely. For instance, in the Mediterranean Sea, a State in whose territory a major hazard occurred must notify States likely to be affected by the pollution, REMPEC and IMO as the relevant international organisation.[108] Similarly, the 1976 Emergency Protocol imposes obligations such as monitoring,[109] rapid, and adequate reporting.[110] The 2002 Prevention and Emergency Protocol also require States to develop and apply monitoring activities,[111] information sharing[112] and reporting.[113]

In the Baltic Sea region whenever incidents in a State territory are likely to cause pollution to areas of the Baltic Sea outside its sovereign control, the State has a duty to 'notify without delay' other Parties whose interest are affected or likely to be affected.[114] The notification obligation is subjective as the time frame for such notification and what will amount to a delay is not provided in the Helsinki Convention. Although further reporting procedure is provided in Regulation 5 of Annex VII, persons in charge of ships (which include offshore installations) are also required to report about incidents 'without delay'. Cooperative information sharing is

[108] Offshore Protocol, Arts.17 and 26(3)
[109] Emergency Protocol, Art.4
[110] Id., Art.8
[111] Prevention and Emergency Protocol, Art.5
[112] Id., Arts.7&8
[113] Id., Art.9
[114] Helsinki Convention, Art.13(1)

also encouraged among the Parties on matters of preparedness and response to pollution, especially with regard to individual country institutions and procedure for emergency preparedness and response.[115]

In the European Union, Article 30(1) of EU Directive 2013/30/EU obligates Member States to ensure that operators or owners of installations notify 'without delay' the relevant authority of any major accident or situations of risk of major accident. The notification must include information on the circumstances, source, potential environmental impact and major consequences of the incident. Also where it is considered that a major hazard from a proposed offshore oil and gas operation is likely to cause transboundary pollution, the other Member State that is likely to be affected shall be given all relevant information prior to the commencement of any operations and both parties shall endeavour to jointly adopt measures to prevent the damage.[116]

Member States that consider that they could be potentially affected by a major hazard incident may request the Member State in whose jurisdiction the operations are to take place or installation is located to forward all relevant information to them. Without prejudice to the functions of the competent authority, both parties may then jointly assess the effectiveness of the measures put in place to contain and prevent damage.[117]

Where third parties are likely to be affected by a risk of foreseeable transboundary effect of a major hazard, information shall be shared with such third party on a reciprocal basis.[118] But if a major hazard does occur or there is an imminent danger of such which is capable of causing

[115] Id., Regulation 10 of Annex VII
[116] EU Directive 2013/30/EU, First Paragraph of Art.31(1)
[117] Id., second paragraph of Art. 31(1). Moreover, to aid joint effective response, any major hazard identified in the process shall be taken into account in internal and external emergency response plans; see Art.31(2)
[118] Id., Art.31(3)

transboundary effect, the Union, Member States and Non-Union countries likely to be affected shall be notified 'without delay'.

During response to accidents, information relevant for emergency response shall continuously be provided by the Member State in whose jurisdiction the situation ensues.[119] Meanwhile, within Union waters the European Commission facilitates the exchange of information by Member States that have on-going offshore oil and gas operations and adjacent countries to promote preventive measures and regional emergency response plans.[120] This form of facilitation will perhaps help to prevent any delays that might result from non-adherence to the requirement of notification "without delay".

5.2.5 Response Operation

The importance of emergency preparedness and response is underlined by the EU Directive 2013/30/EU requiring the Member States to make it mandatory and ensure that a licensing authority does not grant licence for offshore oil and gas E&P unless it is satisfied that the applicant has adequate financial provisions to cover potential liability from such operations and also "has sufficient financial resources for the immediate launch and uninterrupted continuation of all measures necessary for effective emergency response and subsequent remediation."[121]

Every aspect mentioned above will be tested at the moment of an accident that requires immediate response action. The moment of response is the assessment of the adequacy or otherwise of the contingency plan, the equipment and drill exercises by the personnel. It will

[119] Id., Art.31(6)
[120] Id., Art.33(2)
[121] EU Directive 2013/30/EU, Art.4(3)

also ascertain whether information shared has been that useful and the level of assistance a State in need actually gets.

Response to oil pollution incidents in the Baltic Sea requires close cooperation through information sharing/exchange on preparedness and response, research and development, surveillance, joint operational combating exercise and so on.[122] Actual response involves assessment of the situation; use of mechanical means and exceptional use of chemicals after due authorization by the competent national authority.[123] By and large, response operations must be in accordance with best environmental practices[124] which are defined as "the application of the most appropriate combination of measures" as explained in Regulation 2 of Annex II to the Helsinki Convention.

The Helsinki Commission (HELCOM) adopts recommendations in relation to response operations. In a bid to providing standards and time line for response operations, Recommendation 19/17[125] on "Measures in order to Combat Pollution from Offshore Units" requires, inter alia, that response measures must be taken immediately by the operator of a platform while supporting measures of the contingency plan must be taken within eight hours of the spillage and dispersants usage must be limited and subject to authorization by the competent national authority. Also, the "capacity of equipment should march the spill expectancy rate in relation to discharge of oil from production drilling or production platform and expectancy rate of spill from exploration drilling with due regard to geological location of the drilling site and to evaporation and emulsification of the oil."[126] Marching time with action is acceptable but the period of eight hours for initiating supporting measures of a contingency plan might be seen as a delay. If there is preparedness with response equipment adequately

[122] Helsinki Convention, Regulation 10 of Annex VII
[123] Id., Regulation 7 of Annex VII
[124] Id, Regulation 2 of Annex VII
[125] See supra note 72
[126] HELCOM Recommendation 19/17, Clause 1(d)-(f)

stocked and trained personnel on duty, it should take far less than eight hours to initiate a supportive response.

For improved response time and effectiveness HELCOM adopted in 2010 Recommendation 31/1 on "Development of National Ability to Respond to Spillages of Oil and Other Harmful Substances".[127] It recommends that a National Contingency Plan should aim at ensuring the ability to deploy combat services timely. That is, services must leave base two hours upon being informed of an incident; reach the incident site within six hours when it is within the country or region; and adequate and substantial response action on the site of spill within twelve hours maximum. In the case of a major spillage parties are to respond within a maximum of two days of combating the pollution with mechanical pick up devices at sea and use dispersant in line with Recommendation 22/2.[128] There must also be suitable capacity for disposal of recovered or lightered oil within 24 hours. It calls for continued development and improvement of combating services in line with the HELCOM Baltic Sea Action Plan.

In relation to chemical use in response operations, HELCOM Recommendation 22/2[129] on "Restricted Use of Chemical Agents and Other Non-Mechanical Means in oil Combating Operations in the Baltic Sea Area" recommends use of chemicals agents only with optimised efficiency and acceptable effects to the marine environment. While chemical use may be authorised, sinking agents are prohibited and absorbents could be used only when timely removal of the absorbed oil from the sea surface is guaranteed.

[127] Adopted on 4 March 2010 in line with Article 20(1)(b) supersedes HELCOM Recommendations 1/7, 4/3 and 11/13 and is an improvement on the time line set in Recommendation 19/17 of 1998

[128] Paragraph 2.1 of The Guidelines for Applying HELCOM Recommendation 31/1 on Development of National Ability to Respond to Spillages of oil and other Harmful Substances noted that "Oil spill spreading is a very fast process calling for immediate reactions with a maximum of recovery vessels in order to use effectively the first spreading phase with appropriate layer thicknesses. Experiences have shown that the key of effective recovery lies in the first 24 hours after a spontaneous outflow. The layer thickness in relation to the elapsed time and the potential surface sweeping performance must be used for the definition of the needed capacity, taking into account weathering of the oil, type and viscosity, sea state and wind influences."

[129] Adopted on 21 March 2001

Under the OSPAR Convention, joint combat operation is encouraged with two main coordination and command levels. That is the operational control ashore and the tactical command at the scene of operation with the country that asked for assistance taking charge of operations as the lead country. The duty of the lead country, beyond taking charge of the operations, is to give administrative, operational and logistic support to assisting foreign units.[130]

The country in charge of operations may change depending on where the pollution spreads and shifts to. If the pollution spreads to a neighbouring country and operations move there, the new country where the operations are taking place becomes the lead country in charge of the operations. The requirement for the country that asked for assistance to be the lead country may only change where circumstances demand and it is practical and agreed by the parties.[131]

The most recent international instrument on offshore safety, EU Directive 2013/30/EU requires States to have adequate availability of emergency response resources which should be assessed against the capacity to effectively deploy them to the site of an accident. The readiness and effectiveness of emergency response resources and their deployment should be assured and regularly tested through drilling exercises by the operators. Under justified circumstances, response arrangements could be allowed to be reliant on speedily transporting the response equipment such as capping devices, and other resources from distant locations.[132]

Furthermore, States must ensure that operators or owners of installations promptly put their internal emergency plan into action to respond to any major accident or any likely risk of major accident in a manner consistent with the external emergency plan of the State.[133] They must

[130] Bonn Agreement, Counter Pollution Manual, *Recommendation Concerning the Command Structure and Operational Co-operation for Joint Combating Operation*, Clauses 2.1(a)&(b) and 2.4
[131] Id., Clauses 2.5 and 2.1(c)
[132] EU Directive 2013/30/EU, para.35 of Preamble; see also Arts. 11(1)(g), 14 and 28 thereof
[133] Id., Art.28(1); see also para.54 of the Preamble

require operators or owners to take all suitable measures to prevent its escalation and minimise its consequences.[134] In this regard the competent authority may assist with supply of additional resources and a Union member could request additional assistance from the EMSA through the Union Civil Protection Mechanism.[135] During the emergency response, information necessary for fulfilling the investigation obligation under Article 26(1) of the Directive shall be collected by the State.[136]

Where suitable, the planning and responses should also make use of the existing resources and assistance available from within the Union, in particular through the EMSA and the Union Civil Protection Mechanism.[137] EMSA has the mandate to assist Member States in the preparation and execution of their external emergency response plan especially where the impacts are transboundary.[138]

5.3 Non-Binding Regulations on Emergency Preparedness and Response

In addition to binding obligations and requirements contained in global and regional agreements, some not legally binding instruments or guidelines also shape the conduct of operators and other actors in the offshore oil and gas industry. One such instrument is the World Bank Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development (World Bank Offshore Guidelines). Under the World Bank Offshore Guidelines the operators must conduct a spill risk assessment for their facilities and put in place measures to respond to emergencies like Emergency Shutdown System. The latter initiates automatic shutdown

[134] Id., Art.30(2)
[135] Id., Para.48 of the Preamble
[136] Id., Art.30(3)
[137] Id., Para.48 of the Preamble
[138] Id., Art.10(2)(b)

actions to bring the offshore facility to a safe condition. Also, installations must be equipped with valves such as subsea shutdown valves that prompt early shutdown or isolation in the event of an emergency. Personnel must be adequately trained in oil spill prevention, containment and response. Spill response and containment equipment must be deployed or made available as and when necessary for response.

The World Bank Guidelines further require installations to have both a Spill Response Plan that addresses potential oil, chemical, and fuel spills and the capability to implement such plan. The Guidelines provide a basic content of a response plan to include, inter alia, description of the operations, site conditions, current and wind data, sea conditions and water depth, and logistic support; identification of persons responsible for managing emergency, their responsibility, authority, roles and contact details; and possible cooperative measures with government agencies; arrangements and procedures to mobilize external resources for responding to larger spills and strategies for deployment; full list, description, location, and use of on-site and off-site response equipment, and the response times for deployment.

Meanwhile, all spills should be documented, reported and while responding to a spill, a root cause investigation should be carried out and corrective action taken.[139] This is to avoid a repeat disaster and improve operational standards beyond the level they were when the accident occurred.

In addition to government efforts, industry actors are required to cooperate in ensuring safe operation and effective response to emergencies. For example, in the North Sea and adjacent waters of the North West European Continental Shelf, oil and gas companies in the area formed

[139] World Bank Offshore Guidelines, pages 10-11

the Operators Co-operative Emergency Services (OCES) as an organisation to collaborate and share resources in the event of an emergency situation.[140]

Interestingly, forum formation for the purpose of building capacity and peer review is not limited to operators of the industry. Regulators from various countries also form organisations and fora for such purposes. Examples are the North Sea Offshore Authorities Forum (NSOAF)[141] and the International Regulators Forum (IRF).[142] Also in 2012 the European Commission formed the European Union Offshore Oil and Gas Authority Group (EUOAG).[143] The Group is aimed at encouraging exchange of experience, identification of best practices among regulators and industry operators. With this Union-wide structure they hope to maximize the effectiveness of transfer of experiences.[144] The activity of the group is expected to cover issues of prevention of accident and emergency response within Union waters and beyond, where appropriate.[145]

5.4 Conclusion

Following the 20 April 2010 Deepwater Horizon incident in the Gulf of Mexico, capacity to respond to major hazards in offshore petroleum operations have become one of key considerations among operators and regulators of the industry. Beyond States like the US, UK and Norway, some sea regions have also acted in response to the lessons of the Deepwater Horizon.

[140] There are some at national level like the Emergency Preparedness Offshore Liaison (EPOL) Group in the UK that seeks to improve offshore emergency response related issues in the central and northern UK Continental Shelf and west of Shetland
[141] See further details at http://www.psa.no/nsoaf/category999.html and http://www.sodm.nl/sites/default/files/redactie/nsoaf-supervision-report.pdf last visited 20 April 2015
[142] Details about IRF available at http://www.irfoffshoresafety.com/about/ last visited 20 April 2015
[143] Further details available at http://euoag.jrc.ec.europa.eu/ last visited 20 April 2014
[144] Commission Decision 2012/C18/07, see para. 6 & 7 of the Preamble
[145] Id., Art.2

The Barcelona legal framework seems to create room for discretion on the part of States who are expected to use contingency planning and adopt all necessary measures to achieve the main objective of preventing or minimizing the consequences of a major hazard.[146] However, when it comes to emergency response it is vital that a country is prepared with some level of certainty, hence legislation on emergency response indicating basic level of preparedness is essential.

Same is applicable to other regions, which while having requirements for emergency preparedness and response need to review those provisions to address accidents of the magnitude of the Deepwater Horizon blowout. The OSPAR Commission in the aftermath Deepwater Horizon called on the Parties to, as a matter of urgency, start reviewing their existing commitments. Parties are to take extra care to apply all relevant learning from the Deepwater Horizon accident,[147] including the permitting of drilling activities in extreme conditions and continue to evaluate this on a case by case basis prior to authorisation. Similarly, HELCOM adopted new recommendations aimed at improving emergency preparedness and response time.

However, there has been no suggestion on changes in the global legal framework on emergency preparedness and response beyond what is contained in the UNCLOS and OPRC. Though there are some expressions of desire for improved international regulations, the lessons of Deepwater Horizon is yet to propel regulatory changes at the global level. A new agreement may not necessarily be what is needed. Amendment to the OPRC through the IMO or Conference of the parties as provided in Article 14 of the Convention would do at the global level. Such an amendment should be based on research on the state-of-the-art of oil pollution preparedness

[146] 2002 Prevention and Emergency Protocol, Arts 3(1)(b)
[147] OSPAR Recommendation 2010/18 on the Prevention of Significant Acute Oil Pollution from Offshore Drilling Activities

and response as demanded by Article 8 of OPRC. An amendment should address the observed lapses of the OPRC such as response time; technical assistance and cooperation; cost of assistance and reimbursement; internal emergency response plan of the operator; design, construction and equipment of offshore installations to improve response to major hazards.

CHAPTER SIX

LIABILITY FOR ACCIDENTAL POLLUTION FROM OFFSHORE PETROLEUM OPERATIONS

6.0 Introduction

Irrespective of emergency response, accidents may still result in pollution and subsequent damage to property, humans and the environment. Marine pollution may affect economic activities and businesses that are dependent on the sea and its natural resources. Sometimes such pollution could be transboundary. Once there is damage there must be a remedy (*ubi jus ubi remedium*) and the polluter must bear liability and pay compensation.

Transboundary harm is presumably the first aspect of pollution regulated by international law.[1] Transboundary pollution arises where a pollutant moves beyond the territory of one State to cause harmful effect in another State through natural media such as water or air.[2] The principle governing transboundary pollution was formulated in the Trail Smelter Arbitration and received international recognition in the form of Principle 21 of the 1972 Stockholm Declaration which provides that States have sovereign right to exploit their own resources pursuant to their own environmental policies and a corresponding responsibility to ensure that such activities within their jurisdiction or control do not cause environmental harm to other States or areas beyond the limits of national jurisdiction.

Also, Principle 13 of the Rio Declaration expressed the need for States to develop domestic regulations on liability and compensation for the victims of pollution and other environmental

[1] Bodansky, Daniel, *The Art and Craft of International Environmental Law*, (Harvard University Press, Cambridge, Massachusetts London, England) p.11 (2010)
[2] Caron, David D., *Liability for Transnational Pollution Arising from Offshore Oil Development: A Methodological Approach*, 10 Ecology L.Q. 641 (1982-1983); Mccaffrey, Pollution of Shared Natural Resources : Legal and Trade Implications, 71 Am Soc'y Int'l L. Proc. 56 (1977)

damage. It urges States to cooperate and expeditiously develop further international law on liability and compensation for environmental harm caused by activities within their jurisdiction or control to areas beyond national jurisdiction. The imposition of liability for environmental damage is in line with the polluter pays principle.

While there are global liability regimes in respect of dangerous activities that may cause environmental harm, such as nuclear energy, space activities and oil transportation by ships, there is no global instrument that specifically addresses the issue of liability for pollution arising from offshore petroleum E&P. This absence is evident even in cases of transboundary harm.[3] Liability may be viewed from two angles- State responsibility for breach of international obligation to prevent pollution and private law civil liability for environmental damage.

Liability for pollution damage may be a means to enforce environmental standards or supplement existing enforcement mechanisms. Some commentators are of the view that liability provisions are not to influence the conduct of operators and owners of various potentially hazardous ventures but are basically to secure redress for victims of those ventures.[4] Hence, most liability regimes do not provide for payment of compensation for purely environmental damage, that is, where damage has not resulted in economic losses or damage to property.[5] It is not the environment that gets compensated but its users that experience loss as a result of the environmental damage. All the environment may get is clean-up, remediation or restoration to a possible extent. But this notion of non-payment of compensation for damage only, to the environment is changing.[6]

[3] Wetterstein, Peter, 'Environmental Liability in the Offshore Sector with Special Focus on Conflict of Laws (Part 1)', Vol.23 Issue 5, *The Journal of Water Law*, 167, 169
[4] Boyle, A. E., op. cit., p. 9 (2005)
[5] See Wolfrum, Rudiger, op. cit., p.129
[6] For instance, environmental damage was taken as a separate head of claim in the *Nuclear Tests cases* between Australia and New Zealand; *UN Security Council Resolution 687 (1991)* affirmed Iraq's liability under international law for "any direct loss, damage, including environmental damage" as a result of its invasion of Kuwait. Under municipal law, the US, for example, under its *Clean Water Act* imposes liability based on the amount of oil spilled into US waters which is mere environmental damage.

While damage caused by an accident might be easily seen or identified, the identification of the responsible party for damage resulting from offshore accidental pollution might be difficult for some victims. This is due to the complexity of the operations of petroleum E&P which involves a host of players undertaking various jobs in the oil field. For instance, when the installation is jointly owned by multiple entities and the ownership structure is not always known to the public, the operator becomes the only target of victims. There are also circumstances where it is contractors on the installations that are known and sued by claimants for environmental damage. Such contractors rely on their contractual agreements and decline liability and victims are forced to withdraw cases for instituting an action against the wrong party. Thus, the channelling of liability is relevant to both those engaged in offshore activities and potential victims of the operations.

Offshore petroleum activities are on the rise with new discoveries in different regions of the world, including Arctic offshore. In the event of accidental pollution what are the path ways to compensation for victims, especially when it is transboundary? This chapter examines the position of international law on liability for accidental pollution from offshore petroleum E&P activities. Issues such as State responsibility, private law civil liability for accidental pollution, nature of liability, access to justice in transboundary pollution, compensation and limitation of liability will be discussed.

6.1 State Responsibility and Liability for Environmental Damage

Responsibility relates to discharge of customary or conventional international law obligations imposed on States. Liability relates to reparation, damages or other forms of compensation due as a result of damage for breach of applicable international laws and regulations or from failure

to observe them.[7] A State may also bear responsibility for harm resulting from acts not prohibited by international law.

In international law, state responsibility may arise where there is a damage that results from a violation of international obligations.[8] According to the Draft Articles on State Responsibility by the International Law Commission (ILC), internationally wrongful act of a State entails its international responsibility.[9] There is an internationally wrongful act of a State when an act or omission attributable to the State under international law constitutes a breach of an international obligation of that State.[10]

International obligations of a State may arise from conventions to which the State is a party or from customary international law.[11] Customary international law includes State practices that provide further evidence of the existence of such an obligation.[12] Accordingly, the principle of *sic utere tuo ut alienum non laedas* obliges States to ensure that activities within a State do not cause harm to the territory, rights or interests of another State as a matter of customary international law.

The doctrine of State responsibility was influenced by Roman law which is based on the establishment of fault. There is a trend toward an objective responsibility of State whereby the proof of fault is no longer required, making a State liable by the mere violation of international

[7] Nordquist, Myron H., op cit., p. 412 (1991)
[8] Smith, Brian D., *State Responsibility and the Marine Environment* (Clarendon Press) 22 (1988)
[9] International Law Commission, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, November 2001, extract from the Report of the International Law Commission on the work of its Fifty-third session, Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10), chp.IV.E.1, Art I; See also, in Crawford J, *The International Law Commission's Articles on State Responsibility: Introduction, Text and Commentaries* (Cambridge University Press, Cambridge) 77 (2005). The Draft Articles were adopted by the International Law Commission (ILC) on 9 August 2001 and are the result of a study extending over 40 years initiated by the UN itself and thus, can be considered 'teachings of the most respected publicists' for the purpose of art 38 (1)(d) of the Statute of the International Court of Justice. The Draft Articles are also considered to reflect customary international law.
[10] International Law Commission, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, November 2001, Supplement No. 10 (A/56/10), Chapter IV.E. 1, Art 2, in Crawford, supra note 9, 81.
[11] Brownlie, Ian, *Principles of International Law* (Oxford University Press 7th ed) 436-37 (2008)
[12] Smith, Brian D., supra note 8, pp.74-75

law.[13] Though States may not be held liable in practice, it is the violation of established rules of international law that entails a responsibility on the State.[14] States may be held responsible for making laws contrary to international law or failure to do so in compliance with its international obligation.[15] Such violation could be by way of a direct act or an omission that adversely affects the corresponding rights of another sovereign State.[16]

The responsibility of a State for the acts or omissions of the government and or its agencies is referred to as direct responsibility. The responsibility for harmful activities of individuals and corporate entities within the territory of the State that results in pollution or damage outside its jurisdiction is indirect responsibility.[17] In circumstances where the injurious act is that of a private individual or entity, the indirect state responsibility is to the extent of ensuring that redress is available to victims, and where need be, punish such private individual/entity.[18] However, the State may as well be held directly responsible where contrary to its international obligations it refuses, fails and or neglects to prevent the individual or private entity from committing the injurious act.[19] Such individual acts may be imputable on the State especially in cases where it adversely impacts the territory of another State. But in instances where individuals are acting under the authority of the State, liability will generally be imputed on the State even where the actions were *ultra vires*.[20]

The notion of direct and indirect state responsibility becomes complicated in its application when it relates to activities which by virtue of their magnitude and high likelihood of harm,

[13] Id, Jimenez de Arechaga, E., 'International Responsibility', in *Manual of Public International Law*, (M. Sorenson ed.) 531 at p534-535(1968)
[14] Brownlie, Ian, *System of the Law of Nations: State Responsibility Part I* (Clarendon Press, Oxford) p.132 (1983); See Niels-J. Seeberg-Elverfeldt, op. cit., p. 7
[15] Boyle, A. E., op. cit., p. 3; Smith B. D., supra note 8, p. 24; Articles 1 & 2 ILC Draft Articles on Responsibility of States for Internationally Wrongful Acts 2001, ORGA, Supplement No. A/56/10
[16] Smith B. D., supra note 8, p.24
[17] Id at p. 8
[18] Oppenheim, L., *International Law* 8th ed., p. 338 (1955)
[19] Id.
[20] Id.

constitute a continuous threat to the environment even with the best of precautions taken and due diligence applied. These activities are embarked upon not only for the personal benefit of the individual licensee or operator but also for the benefit of the given society and even the international community, such as space exploration, nuclear energy development and offshore petroleum E&P, which are dangerous but still lawful.[21] In practise they have the seal of the State as they are undertaken with the approval, licence or authority of the State within which they operate.[22]

Outer space or offshore petroleum E&P are not prohibited by international law and as such undertaking these activities within a State does not constitute a breach of an international obligation.[23] Similarly, States under international law are entitled to exploit the resources in their territorial waters, EEZ and the continental shelf.[24] However, considering the provisions of Article 235(1) of UNCLOS a State that does not prevent marine pollution from these activities might be failing in its international obligation and held responsible.

While it is established that there is an international law duty of States to prevent harm to the territory of other States and areas beyond state control, what is not settled is the extent to which a State may be held liable when transboundary pollution does occur.[25] The concept of responsibility of a State for damage caused to areas beyond national jurisdiction has been asserted but issues of who and by whom claims for damage is to be made, the measure of

[21] Niels-J. Seeberg-Elverfeldt, op. cit., p.9
[22] Id., Niels-J. Seeberg-Elverfeldt postulates that in view of the fact that states benefit from these activities through royalties, taxes and promotion of the domestic economy the state should also share in the "burden of their disadvantages". But these issues are not sufficient to hold a State liable in international law.
[23] Id., p.10
[24] See UNCLOS, Art.77; Art. 2 of the 1958 Convention on the Continental Shelf
[25] Brunnee, J., op. cit., p.353

damage and whom it should be paid to are some of the technical difficulties of the application of the concept.[26]

Generally, it is a State's duty to ensure that there is a process for compensation and that effective liability regime exists in domestic law. Holding the State liable for environmental harm resulting from activities within the State does not exist in practice. For instance, under the 1992 Civil Liability Convention a Contracting State is obligated to ensure that its courts are competent to handle claims. Except in cases of judgment obtained by fraud or a breach of the rules of fair hearing a decision of a competent court in a Contracting State is recognised and enforceable by the courts of other Contracting States.[27]

Under UNCLOS, State liability as stated in Article 235 is in general terms and as such governed by the international law of State responsibility.[28] By providing that liability is to be "in accordance with international law" leaves open the question of strict liability, whether of a State or of an international organisation, as part of general international law.[29] In the absence of definitive State liability rules in international law and the failure of States to expeditiously formulate such rules, there is a rare resort to State responsibility to hold a State liable and subject to payment of compensation for environmental harm resulting from activities within territories under its control.

[26] Australia's working paper on preservation of the marine environment (Source 1) at the 1973 session of the Sea-bed Committee, quoted in Nordquist, Myron H., op. cit., p. 402 (1991); see also Patricia Park, *International Law for Energy and the Environment*, 2nd ed. (CRC Press, Taylor & Francis Group) 96 2013
[27] Art. IX of 1992 CLC
[28]; see art. 235(1) of UNCLOS which provides, that "States are responsible for the fulfilment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law." Similarly, 2006 ILC Draft Principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities only noted in the preamble that States are responsible for infringements of their obligations of prevention under international law. The main principles of the draft did not address state liability.
[29] Nordquist, Myron H., supra note 9, p.12

6.1.1 State Responsibility for Accidental Pollution from Offshore Petroleum Operations

The notion of state responsibility can be advanced through the 'objective' or 'risk' theory and the 'subjective' or 'fault' theory. In the 'objective' or 'risk' theory responsibility is not fault based. It attaches responsibility where a causal connection can be established or attributable to the State. On the other hand, the 'subjective' or 'fault' theory accords responsibility based on proven fault of the State by way of either intent or negligence on the part of the State.[30] Indications from State practice[31] and the decisions of arbitral tribunals and of the International Court of Justice[32] show a wider acceptance of the theory of objective responsibility. Which promotes protection of the international marine environment by ensuring that responsibility is not avoided for lack of fault. The theory enjoys the support of the ILC, publicists and commentators.[33]

Under the objective standard, a State will be responsible where an international obligation has been breached unless due diligence is proved.[34] Brownlie argues that the determining factor of breach is the amount of control which ought to have been exercised in the particular circumstances and not the extent of actual control.[35] The reality, as Boyle observed, is that "accidents may happen even in the best regulated and managed installations" and as such not

[30] Brownlie, Ian, supra note 11, pp. 436-440
[31] Id, pp 437 - 438
[32] In the *Neer Claim* (1926) 4 RIAA 60, 61 the Commission held that: "the propriety of governmental acts should be put to the test of international standards". This was reinforced in the *Roberts Claim* (1926) 4 RIAA 77, 80 where the test applied was "whether aliens are treated in accordance with ordinary standards of civilization" and in the *Caire Claim* (1929) *5* RIAA 516, 529 where Presiding Commissioner Verzijl applied the doctrine of 'objective' responsibility of the State, that is, the responsibility for the acts of the officials or organs of a State, which may devolve upon it even in the absence of any 'fault' of its own.
[33] Neither the ILC Draft Articles on State Responsibility nor the Declaration of United Nations Conference on Human Environment (Stockholm Declaration) indicate need for fault; Starke, J., *Introduction to International Law* (Butterworths, 9th ed,) 301 (1984); Brownlie, Ian, supra note 11, pp. 437-438. In any case, as Judge Azevedo noted in *the Corfu Channel case* (1949) ICJR 4, 'the notion of culpa is always changing ... it tends to draw nearer the system of objective responsibility'
[34] Brownlie, supra note 11, p.455.
[35] Id, 453

an indication of failure of due diligence or breach of duty by the State.[36] Moreover, in the absence of a precise legal meaning of 'due diligence' the standard for its determination would vary according to circumstances.

Accordingly, except in the area of strict liability, the responsibility of the State with respect to marine pollution from offshore facilities must be assessed by determining whether the State has acted with due diligence in the circumstance. Due diligence is not easy to administer as clearly accepted international standards that define the content of the duty are absent in international treaties.[37] This places heavy burden of proof on the State which must establish a failure of due diligence.

Also, making States responsible for transboundary harm may have implication on the essence of the polluter pays principle. If a State is made the responsible and liable party for harm caused by activities of mostly private actors, it would amount to government subsidising such industries. If operators must be made to improve on safety of offshore operations, then a direct claim against the operators would do more to promote the implementation of a 'polluter pays' principle to the allocation of transboundary pollution cost instead of making States guarantors for operators.[38]

The issue of legal standing of an individual to institute claims against a State and the forum in international stage might create difficulties for such an approach. Hence, State responsibility and liability should be more of residual sources of redress. International legal framework should be focused on ensuring that States create the requisite legal environment in its domestic laws for persons affected by transboundary pollution to be adequately compensated within a reasonable time. The domestic law would provide for the responsible party in the event that

[36] Boyle, A. E., op. cit., p. 7
[37] An example of such provision is in the 1994 Convention on Nuclear Safety
[38] Boyle, A. E., op. cit., p.8

regulations are breached. The law must make clear who is responsible for any accident in which third parties are affected in the course of the E&P activities.[39]

States have a duty to have in place a legal system that provides prompt and adequate compensation for victims of marine pollution from natural or juridical persons within their jurisdiction.[40] Such legal regime would bring to relevance the issue of exhaustion of local remedies as provided in Article 295 of UNCLOS, especially where a State chooses to exercise its right of diplomatic protection with regard to such damage. The duty imposed by paragraph 2 of Article 235 would be inapplicable in cases where the damage is caused by the State and a claimant State is not required to subject itself to the respondent State legal system before invoking international procedures.[41]

Without making specific provisions, UNCLOS urges States to cooperate in the implementation of existing international law and further develop international law of responsibility and liability "for the assessment of and compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds."[42]

UNCLOS while being unequivocal on the obligation of States to take proactive measures aimed at preventing marine pollution,[43] does not determine the nature of liability. In essence, UNCLOS only establishes the existence of liability for environmental damage in international law. However, the wordings of Article 235 suggests that the State is not primarily liable for any damage but has an obligation to ensure that there is prompt and adequate compensation for victims. This suggests that when a States fails in that primary duty it could be held responsible

[39] For instance, in the case of the Macondo well where more than one company was involved in its development, BP the, the operator was the responsible party for the blowout based on the provisions of the US Clean Water Act
[40] UNCLOS, Art. 235(2)
[41] Nordquist, op. cit., p. 413
[42] UNCLOS, Art. 235(3)
[43] See Niels-J. Seeberg-Elverfeldt, op. cit., p.43

in international law.[44] But in the absence of a developed international law of liability, it might be impossible to hold such a State liable. Whatever the arguments for or against State responsibility for accidental pollution, the fact is that States rarely resort to it.

It follows that in the absence of any other convention to the contrary, on the issues of compensation for damage caused to the marine environment, access to justice would be determined by the municipal legal regime of the State in whose jurisdiction the operations are based. In which case victims of transboundary pollution may go through intricate processes, both diplomatic and legal to get remedy. For, instance, in Ixtoc I spill, slick extended along parts of Texas coast and caused damage. The United States government could not sue the Mexican government which refused to admit any breach of international rules.[45] Also, liability issues arising from the transboundary impact of the Montara oil spill are still unresolved.[46] Indonesia is faced with difficulty in its effort to getting adequate compensation for its citizens. These incidents exposed the challenges of the continued absence of provisions on liability for marine pollution resulting from offshore petroleum E&P, especially in a transboundary context. This prompted Indonesia's proposal to the IMO Legal Committee for a new work programme to address the liability issue.[47]

Concern about this lacuna in international law has been expressed long ago. For example, Ross observed that "while international law recognises the responsibility of States for extraterritorial

[44] This is based on the collective reading of articles 194(2) and 235(1) and (2). See Niels-J. Seeberg-Elverfeldt, op. cit., p.44

[45] See Handl, Günther, The case for Mexican Liability for Transnational Pollution Damage Resulting from the Ixtoc I Oil Spill, Hous. J. Int'l L. 229, pp.230&237 (1979-1980); Cates, Melissa B., 'Offshore Oil Platforms Which Pollute the Marine Environment: A Proposal for an International Treaty Imposing Strict Liability' 21 San Diego L. Rev. 691, 692 (1983-1984); Fender, James E., 'Trouble Over Oiled Waters: Pollution Litigation or Arbitration-The Ixtoc I Oil Well Blow-Out' 4 Suffolk Transnat'l L.J. 281, 282-283 (1980)

[46] There has been unsuccessful meetings between the operators and Indonesian government officials over claims for damage to Indonesian waters from the Montara spill. See The Jakata Post, *Probe on Montara oil spill urgent: Experts*, 27 July 2012, available at http://www.thejakartapost.com/news/2012/07/27/probe-montara-oil-spill-urgent-experts.html and D Borthwick, *Report of the Montara Commission of Inquiry*, Montara Commission of Inquiry, 17 June 2010, p. 302-303 http://www.ret.gov.au/Department/Documents/MIR/Montara-Report.pdf

[47] LEG 97/14/1, of 10 September 2010, p.1

damages, international judicial processes do not provide adequate means for obtaining compensation for damages and securing 'the dis-continuance of the injurious activity or its prevention even before actual damage is suffered'."[48] Hence, an international legal framework that establishes a minimum acceptable standard of equal access to justice in cases of environmental harm is desirable.

6.1.2 Liability for Transboundary Harm Arising out of Hazardous Activities

The fact that activities undertaken in one State may have impact on another State has been acknowledged by international legal doctrine. But not much has been achieved in State practice to develop a clear and coherent legal framework to address this problem. The ILC work on State liability for acts not prohibited by international law started in the 1970s. it made an attempt to fill the legal lacuna by preparing draft Articles on issues of liability of States for acts not prohibited by international law in 1990.[49] These first articles were intended to supplement the rules on State responsibility and establish principles to address State and civil liability concerning transboundary harm arising from activities that are not prohibited but the principles were controversial and incomplete.[50]

In 1992 the topic of international liability was divided into prevention and remedial measures but the ILC focused first on developing draft articles on prevention. A final draft Article on the Prevention of Transboundary Harm from Hazardous Activities was adopted in 2001 by the

[48] Ross, William M., *Oil Pollution as an International Problem: A Study of Puget Sound and the Strait of Georgia* (University of Washington Press, Seattle and London) p.77 (1973); see also Legault, L. H. J. *The Freedom of the Sea: A License to Pollute?* 1970 Seminar paper cited by Ross at p.77
[49] J. Barboza, Sixth Report, UN Doc.A/CN.4/428, 39 (1990), cited by Sands, Philippe, et al. *Principles of International Environmental Law*, op. cit., p.734
[50] Sands, Philippe, et al. *Principles of International Environmental Law*, op. cit., p.734

Drafting Committee of the ILC. A return to liability topic was made in 2002 and in 2006 the ILC came up with Draft Principles on the Allocation of Loss in the case of Transboundary Harm Arising out of Hazardous Activities (2006 ILC draft Principles).[51] Both of these ILC draft Principles are focused on hazardous activities that are not prohibited under international law.[52]

The 2006 draft Principles acknowledged the relevance of Principles 13 and 16 of the Rio Declaration and notes that irrespective of compliance by a State with its obligation of prevention of transboundary harm, incidents involving hazardous activities may still occur.[53] However, States are responsible for infringements of their obligations to prevent harm under international law.[54] The draft explains "damage" to mean significant damage caused to persons, property or the environment. It includes loss of life or personal injury; loss of, or damage to, property, including property which forms part of the cultural heritage; loss or damage by impairment of the environment; the costs of reasonable measures of reinstatement of the property, or environment, including natural resources; and the costs of reasonable response measures. "Hazardous activity" means an activity which involves a risk of causing significant harm.[55] By the nature of damage caused by accidental pollution from offshore petroleum operations the draft Principles would be applicable to offshore installations.

The essence of the draft Principles is to ensure that victims of transboundary damage get prompt and adequate compensation.[56] States must in their domestic law provide for this or other

[51] UN Doc. A/61/10 available at http://legal.un.org/ilc/reports/english/a_61_10.pdf last visited 25 April 2015; http://untreaty.un.org/ilc/texts/instruments/english/draft%20articles/9_10_2006.pdf (accessed on March 27, 2012

[52] Principle 1 of 2006 ILC draft Principles

[53] Preamble of 2006 ILC draft Principles

[54] Id; see art. 235(1) of UNCLOS which provides, that "States are responsible for the fulfilment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law."

[55] Principle 2 of 2006 ILC draft Principles,

[56] Principle 3. Also, in the event of transboundary damage the environment should be preserved and protected through mitigation of damage and its restoration or reinstatement. Similar obligation has been adopted under the law of the sea as provided in Art. 235(2) thus: "States shall ensure that recourse is available in accordance with

relief for damage to the marine environment by natural or juridical persons under their jurisdiction. Similarly, Chapter IV of the 1990 draft addressed the issue of liability for transboundary harm with a focus, in principle on harm being fully compensated.[57] But States were at liberty to negotiate reductions.[58] The Articles granted locus and access to justice to States, individuals or legal entities to sue in the State of origin or the affected State and non-discrimination in the application of national laws.[59] It also provides for recognition of judgement and limitation of State immunity, save in relation to enforcement measures.[60]

However, in view of the inevitability of harm in hazardous activities,[61] the ILC also focused on issues of prompt payment of adequate compensation to victims of transboundary damage. The 2006 ILC Draft Principles urges States to preserve and protect the environment through mitigation of damage and restoration or reinstatement of the environment.[62]

The draft Principles provide for imposition of strict liability on the operator and prompt payment of compensation to victims of transboundary pollution. Furthermore, operators and entities should be made to provide financial security such as insurance and encouraged to collectively establish industry wide fund. Where such measures are still inadequate the State is urged to make funds available for compensation and address the environmental damage.[63] This may involve providing financial assistance through the specific industry and State fund to supplement the financial security provided by the operator.[64]

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their legal systems for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction."

[57] Art.21 of 1990 ILC Draft Articles
[58] Art.23 of 1990 ILC Draft Articles
[59] Id, Arts.28(b), 29(a), 29(b) and 29(c) and 30
[60] Id., Arts.31 and 32
[61] Preamble to the 2006 ILC draft Principles
[62] Principle 3, 2006 ILC draft Principles
[63] See generally Principle 4
[64] Principle 7(2) of 2006 ILC draft Principles

States are to grant legal standing and access to justice and environmental information to any victim of incidents from hazardous activities irrespective of whether the victim is from the State of origin.[65] The draft Principles call for adoption of global, regional or bilateral agreements to address hazardous activities to provide effectively for compensation, liability and emergency response.[66]

Though these principles address transboundary damage for hazardous activities, it does not specifically make reference to offshore petroleum activities. Moreover, it is not obligatory on States to implement them as the draft is not a binding instrument. However, it will influence international tribunals and provide some guide on what should be expected of a binding instrument that may be negotiated at international levels - global, regional or bilateral- to regulate accidental pollution from offshore petroleum operations.

6.2 International Civil Liability Regime for Dangerous Activities

There are good examples of civil liability regimes in international law in respect of some activities that are dangerous and entail high risk of damage. There is no doubt that offshore petroleum E&P is a dangerous activity. While there is no global international civil liability regime governing them, certain areas such as nuclear power generation and transportation of dangerous substances have civil liability regimes that could serve as a guide to what may be appropriate for the offshore petroleum industry.

[65] Principle 6 of 2006 ILC draft Principles

[66] Principle 7(1) of 2006 ILC draft Principles provides that "Where, in respect of particular categories of hazardous activities, specific global, regional or bilateral agreements would provide effective arrangements concerning compensation, response measures and international and domestic remedies, all efforts should be made to conclude such specific agreements."

6.2.1 Civil Liability in Maritime Transportation Activities

Civil liability regime in maritime transportation is robust with conventions and protocols adopted under the auspices of the IMO. The regime has evolved over time in response to major shipping hazards and the need to fully apply the polluter pays principle by ensuring that adequate compensation is paid to victims and polluted marine environment is restored.

A primary regime for civil liability for accidental oil pollution damage in maritime transportation is the 1992 protocol to the 1969 Civil Liability Convention (CLC) now reconstituted and referred to as the International Convention on Civil Liability for Oil Pollution Damage 1992 (1992 CLC).[67] The initial 1969 CLC was adopted following the Torrey Canyon accident of March 1967 and has been amended by three protocols.

In addition to the 1992 CLC, there are the International Oil Pollution Compensation Funds (IOPCF) made up of the 1971 Fund, 1992 Fund and the 2003 Supplementary Fund. The IOPCF is made up of contributions from persons who received within a specific calendar year in excess of 150,000 tonnes of crude oil and heavy fuel oil transported by sea to State parties to the Fund Convention.[68] This by implication transfers some of the economic consequences of the damage to the owners of oil cargo.[69]

The 1992 Civil Liability regime covers pollution damage in the various maritime zones of a State party, including the EEZ.[70] While the definition of ship includes sea going vessels and any sea borne craft of any type whatsoever, actually carrying oil in bulk as cargo,[71] it excludes vessels used exclusively for carrying oil in lakes or rivers and fixed or mobile oil rigs.[72] The

[67] 973 UNTS 3 (hereafter 1992 CLC), This was further amended in 2002
[68] Art. X of the 1971 Fund Convention as amended by art. XII of the 1992 Protocol
[69] The 1971 Fund Convention ceased to be in force on May 24, 2002 due to its denunciation as provided for under the 1992 protocol to the fund.
[70] Id
[71] Article I(1) of 1992 CLC
[72] Id

Convention covers only persistent hydrocarbon mineral oil[73] as non- persistent oils were unlikely to cause real damage to the environment. Any other damage it is likely to cause may be addressed under the 1976 Convention on Limitation of Liability for Maritime Claims (LLMC).[74] While clean-up cost and cost incurred in restoring the damaged environment can be compensated, damage to the environment per se cannot be compensated.

The Convention imposes strict liability on the owner of a ship for pollution damage,[75] covering cost of clean-up, loss to fishermen and measures taken to prevent or minimize damage to the environment.[76] Liability is channelled to the tanker owner who is solely liable for damage caused by any oil pollution.[77] Where it can be proved that such other persons as the ship master and crew, operators or salvors wilfully or recklessly caused the damage they may be held liable. The ship owner may also be free from liability if it is proven that the discharge or escape resulted from war and other natural disasters of exceptional, inevitable and irresistible character; wholly caused with intent to cause damage by a third party or wholly caused by failure of the coastal State to meet her obligation of providing navigational aid to the maritime community.[78] For the ship owner to rely on it as a defence, the third party or State must have wholly caused the damage. Where damage is caused by spills from more than one vessel their owners shall be jointly and severally liable.[79]

[73] Art. II(2) of 1992 CLC Convention defined oil as "any persistent hydrocarbon mineral oil such as crude oil, fuel oil, heavy diesel oil and lubricating oil, whether carried on board a ship as cargo or in the bunkers of such a ship". Earlier definition in art. I(5) of the 1969 CLC did not use the phrase "hydrocarbon mineral"
[74] Kiran, R. Bhanu Krishna, 'Liability and Compensation for Oil Pollution Damage: An examination of IMO Conventions', 3 NUJS L. Rev. 399 at 403 (2010); see also Art.2 1976 Convention on Limitation of Liability for Maritime Claims 1456 UNTS 221 (1976)
[75] Art. I(6) of the 1992 CLC define 'pollution damage' as "(a) loss or damage caused outside the ship by contamination resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, provided that compensation for impairment of the environment other than losses of profit from such impairment shall be limited to costs of reasonable measures of reinstatements actually undertaken or to be under taken; (b) the cost of preventive measures and further loss or damage caused by preventive measures."
[76] Art. II of 1992 Civil Liability Convention; See also Sands, P., et al, supra note 55, pp.746-747
[77] Art. III(1) of 1992 CLC
[78] Art III(2)(c) of 1992 CLC.
[79] Art. IV of 1992 CLC.

The owner of the ship is allowed to limit his liability. However, the ship owner may not be entitled to limit his liability where it is proven that he was responsible for the damage or loss.[80]

Where the owner is entitled to limit his liability, a limitation fund in the amount of the liability cap is established in a competent court in a member State to settle proven claims.[81] Whenever the claims are more than the limitation fund, the payment is made to claimants on a pro rata basis.[82]A Contracting State is obligated to ensure that its courts are competent to handle claims under the convention and except in cases of judgment obtained by fraud or a breach of the rules of fair hearing a decision of a competent court in one Contracting State is recognised and enforceable by the courts of other Contracting States.[83]

As part of the safeguards provided by the Convention, there is compulsory insurance applicable to all owners of vessels carrying 2000 tons or more oil as cargo. This could be insurance or other financial security up to the limit of liability applicable to the vessel.[84] A person who suffers damage may sue the vessel owner's insurer directly for compensation.[85] The insurer being a guarantor and exposed to direct action is also entitled to limit his liability even where the owner has lost his right to limitation. The insurer also enjoys all defence that the vessel owner could have invoked against a claimant (assured).[86] Moreover, contrary to the interest of the ship owner, the insurer may raise as a defence to the effect that the damage resulted from the wilful misconduct of the owner.[87]

Though the 1992 CLC addresses issues of environmental and related damage from oil tankers in the marine environment, it is applicable only to oil tankers carrying oil as cargo. No pollution

[80] Art. V (2) of 1992 CLC. Under Article V(2) of the 1969 CLC the owner was not entitled to limit his liability if the accident or incident was caused by his actual fault or he was privy to it.
[81] Art. V(3) of the 1992 CLC
[82] Art. V(4) of the 1992 CLC
[83] Art. IX of 1992 CLC
[84] See generally Art VII of the 1992 CLC
[85] Art. VII(8) of the 1992 CLC
[86] Id
[87] Id

damage arising from offshore E&P activities is accommodated in the convention. In keeping with limitation of time in civil law, claims under the CLC cannot be brought later than 3 years from when the cause of action arose and not later than six years from the date of the incident that caused the damage.[88]

The 1992 Fund Convention provides additional compensation for victims of oil pollution as the Compensation Fund it established is used to settle victims not fully compensated under the 1992 Civil Liability Convention. Furthermore, a 2003 protocol to the Fund[89] created a supplementary Fund and increased the available sum in a single incident to US$1 Billion.

State parties are responsible for ensuring that individuals liable to contribute to the Fund do so or the State may on its own assume the obligation on behalf of such individuals within its territory to contribute to the IOPCF.[90] The IOPCF entertains claims of damage to property, cost of clean-up operations and measures taken to prevent or minimize pollution damage. Furthermore, unlike the Civil Liability Conventions the IOPCF entertains claims on alleged loss of earnings suffered by property owners and users as a result of a spill. Also, subject to certain conditions pure economic loss without actual pollution damage is recoverable.[91] In respect of claim for cost of measures taken to minimize or prevent pollution damage, the measures taken must be reasonable, real expense actually incurred and there must be direct link between the expenses and the incident.[92]

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[88] Art. VIII of the 1969 CLC

[89] Protocol to the International Convention on the establishment of an International Fund for Compensation for Oil Pollution Damage, London, 92FUND/A.8/4, Annex I, 16 May 2003, in force 3 March 2005

[90] Art. XIV of the 1971 Fund Convention

[91] In terms of purely economic losses the IOPCF will take into consideration (a) the geographic proximity between the contamination and the activity of the claimant (b) extent of claimant's economic dependence on the affected activity (c) the extent of availability of alternative sources of business supply for the claimant (d) the level to which the claimant's business is an integral part of the economic activity of the area. Guidelines on Oil Pollution Damage, available at http://www.comitemaritime.org/cmidocs/rulesoil.html ; Kiran, R. Bhanu Krishna, supra note 74, p.417

[92] IMO, Claims Manual of International Oil Pollution Compensation Fund 1992, 13 (1998) in Kiran, R. Bhanu Krishna, supra note 74, p. 417. However, in *IOPCF v. M. Gouzer, Tevere Shipping and Steamship Mutual Underwriting*, the French Court observed that the criteria set by the IOPCF for the settlement of pollution claims are not binding on the court but at best a reference of 'indicative values', see 2006 DMF 1014

The 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage couched similar to the Civil Liability Convention made provision for bunker oil pollution in the territory, territorial sea and EEZ of the State parties.[93] A significant difference is that the limitation of liability is as applicable under the 1976 LLMC as amended.[94]

There are also additional voluntary funds set up to indemnify the 1992 Fund Convention and the 2003 Protocol on Supplementary Fund, for compensation paid above the liability limit of ship owners under the 1992 CLC.[95] These are the 2006 Small Tanker Oil Pollution Indemnification Agreement (STOPIA) entered between owners of small tankers and their insurers. Under it liability of its members is increased to 20 million Special Drawing Rights (SDR). Second is the 2006 Tanker Oil Pollution Indemnification Agreement (TOPIA) applicable to tankers entered in the protection and indemnity insurance (P&I) clubs, being members of the International Group of P&I clubs reinsured through a polling arrangement. Basically, it indemnifies the Supplementary Fund for 50 per cent of compensation paid by the Fund for incidents involving covered tankers.[96]

6.2.2 Civil Liability for Nuclear Damage

In the field of the peaceful use of nuclear energy, the 1960 Paris OECD Convention on Third Party Liability in the Field of Nuclear Energy[97] and the global 1963 IAEA Vienna Convention on Civil Liability for Nuclear Damage[98] govern civil liability for damage.

[93] Art. II, 2001 Bunker Convention
[94] 1456 UNTS 221 (1976)
[95] Agreements reproduced in IOPC Funds Assembly, SUPPFUND/A/ES.2/7 1 February 2006; IOPC Fund, STOPIA and TOPIA 2006, available at http://www.iopcfunds.org/about-us/legal-framework/stopia-2006-and-topia-2006/ last visited 25 April 2015
[96] Sands, P., et al, supra note 55 at p.756
[97] 956 UNTS 251 adopted on 29 July 1960 and in force 1 April 1968 (hereafter 1960 Paris Convention)
[98] 1063 UNTS 265 adopted 21 May 1963, in force 12 November 1977 (hereafter 1963 Vienna Convention)

The Paris Convention harmonises national legislation with regard to third party liability and insurance against risk, provides minimum standards for liability and compensation in the event of a nuclear accident. It is applicable to nuclear incidents and damage that occur in the territory of contracting parties[99] but silent on transboundary harm to non-contracting States. The Paris regime is supported by the 1963 Brussels Supplementary Convention, the 1982 Protocol to the Paris Convention and the Brussels Supplementary Conventions that increased available amount of compensation.[100] Following the 1986 Chernobyl incident negotiations on a new instrument on State liability for nuclear damage, led to the adoption of the 1997 Protocol to the 1963 Vienna Convention[101] and the 1997 Convention on Supplementary Compensation.[102] The 1997 Protocol extended the application of the regime to damages that occur in the EEZ.[103] Similarly, a 2004 Protocol to the Paris Convention extends its application to all territories and maritime zones of parties. There is a 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention[104] that linked the operative parts of both regimes.[105]

The Paris Convention provides for strict liability for injury to persons and loss of life or property but not in respect of damage to the environment. The restrictive application of liability was further eroded in the UK with the judicial exclusion of 'pure economic loss.[106] But some parties such as the Netherlands and Germany extended the application of the treaty to 'environmental' damage.[107] Liability is absolute with some exceptions and defences in the

[99] 1960 Paris Convention, Art.2
[100] Paris, 16 November 1982, IELMT 963:101B; Further revision through two 2004 Protocols aims to amend Article 1(a)(vii) to increase the heads of damage to take into consideration, inter alia, cost of preventive measures and measures of reinstatement of impaired environment. These 2004 Protocols also extend the application of the Paris Convention to damage caused to non-Convention States including maritime zones. Also the limitation of time is extended to 30 years. But they are not yet in force.
[101] 36 ILM 1454, in force on 4 October 2003
[102] 36 ILM 1473 (1997) (not in force)
[103] 1997 Protocol, Art.12, establishing a new Art. XI (1bis) to the 1963 Convention
[104] Vienna, 21 September 1988, in force 27 April 1992, 42 Nuclear Law Bulletin 56 (1998), cited in Sands, Philippe, et al. *Principles of International Environmental Law*, op. cit., p.745
[105] 1988 Protocol, Art II and IV
[106] See *Merlins v. British nuclear Fuels Plc* (1990) 3 All ER 711
[107] Sands, Philippe et al, supra note 49, p.739

Vienna Convention.[108] Like the Paris Convention, liability for damage to environment is not covered but the law of the competent court in a State may recognise other forms of damage.[109]

The 1997 Protocol expanded damage that will give rise to liability to include economic loss, cost of preventive measures and measures of reinstatement of impaired environment.[110] Environmental damage per se is not to be compensated but loss of life or personal injury or damage to property attract damages. While the Vienna regime is applicable to nuclear damage suffered anywhere, application of liability provisions are restricted to within the nuclear power owning States.[111]

In both regimes liability is channelled to the operator who may limit liability.[112] Operators are required to maintain insurance or other financial security.[113] However, where the security is inadequate to satisfy a claim, the installation State is expected to take care of the deficiency up to the liability limit.[114] Such contribution by the State may be viewed as subsidising pollution which the polluter-pays principle does not encourage.

The 1997 Protocol allows Parties to establish liability limit for nuclear damage in their territories but the liability cap must not be lower than 300 million SDRs.[115]The concern is that an increased liability cap would make the acquisition of insurance almost impossible in many countries and limit further development of nuclear power.[116] The 1997 Convention on Supplementary Compensation, among others, provides detailed rules on a supplementary funding once it appears that damage caused by an incident exceeds the liability cap.[117]

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[108] 1963 Vienna Convention, Arts IV
[109] 1963 Vienna Convention, Art. I(1)(k)(ii)
[110] 1997 Protocol, Art.2, amending Art. I(k) on the 1963 Convention
[111] 1997 Protocol, Art.3, establishing a new Art. IA to the 1963 Convention
[112] 1960 Paris Convention, Arts 4 & 9 and Art. 7; 1963 Vienna Convention, Arts. I(1)(k) and II(1). Here the liability cap is determined individually by each Member State
[113] 1960 Paris Convention, Art.10
[114] 1963 Vienna Convention, Arts. V and VII
[115] 1997 Protocol, Art. 7(1), replacing Art. V of the 1963 Convention
[116] Sands, P., et al, op. cit., pp.743-744
[117] 1997 Convention on Supplementary Compensation, Art. VI-XII and XIII-XIV

In the premise, the civil liability regimes in nuclear field and maritime transportation show an application of strict liability, channelled to the operator of a nuclear plant or owner of a vessel. A responsible party is expected to have insurance or other financial security. But liability is capped to such amounts that are likely to be exceeded by claims in the event of a serious catastrophe. Perhaps, in recognition of the deficiency of liability caps, fund and supplementary funds are established. Also, other sources of funding liability are suggested to help meet claims that may not be satisfied with a cap on liability.

6.3 Channelling of Liability

Channelling of liability clearly defines the responsible party in the event of any damage to the environment and third parties. This makes for easy identification of defendants by victims of any harm to direct their claims.[118] Liability channelled, mostly on a non-fault basis, to the owner or operator of a dangerous activity has become a practical solution in some activities such as shipping and nuclear energy.[119] There is no global convention that addresses this issue in offshore E&P.

Some regional regimes channel liability for pollution to the operator of the offshore installation. For instance, in relation to liability and compensation in the Mediterranean Sea region, the parties are to individually formulate "appropriate rules and procedures for the determination of

[118] Boyle, A. E., op. cit., p.14

[119] 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (in force 1968); 1963 Brussels Agreement Supplementary to the 1960 Convention on Third Party Liability (in force 1974); 1963 Vienna Convention on Civil Liability for Nuclear Damage; 1992 Convention on Civil Liability for Oil Pollution Damage (in force 1996); 1992 Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (in force 1996); 1993 Convention on Civil Liability for Activities Dangerous to the Environment; 1996 Convention on Liability and Compensation for the Carriage of Hazardous and Noxious Substances by Sea; 1997 Protocol on Civil Liability for Nuclear Damage and Convention on Supplementary Compensation; 1999 Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Waste; 2001 Convention on Civil Liability for Bunker Oil Pollution Damage; 2003 Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters

liability and compensation for damages".[120] But until States formulate such rules and procedures, liability shall, in line with provisions of the Offshore Protocol, be channelled to the operator to make adequate and prompt payment of compensation.[121]

In the North-East Atlantic, the issue of liability was not addressed in detail by the 1992 OSPAR Convention. But there is an element of liability as member States are obligated to enforce the polluter-pays principle, which could be applied to accidental pollution from offshore installations. Similarly, the Helsinki Convention for the Baltic Sea region provides for the mandatory application of the polluter-pays principle without an indication of who should be held liable in the event of accidental pollution of the marine environment.[122] In the application of the polluter-pays principle, the operator might be held responsible for any incident that impact adversely on the marine environment and related interests.

One early attempt to establish a liability regime for offshore oil and gas exploration and exploitation activities in the North Sea was made in 1977. The Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources (CLEE)[123] provides for liability in respect of pollution from an installation under the jurisdiction of one State party and suffered in the territory of another State party to the Convention.[124] Under the Convention, liability is channelled to the operator of the offshore installation.[125]Where the installation has more than one operator, they shall be jointly and severally liable in the event of accidental pollution.[126] There are various defences available to

[120] Offshore Protocol, Art. 27(1); see also Art. 16 which requires parties to ensure that operators have a contingency plan fashioned in line with the Contracting state parties contingency plan established in accordance with the Protocol concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency which they expected to implement mutatis mutandis.
[121] Offshore Protocol, Art. 27(2)(a)
[122] Helsinki Convention, Art.3(4)
[123] 16 ILM 1451 (1977) Not in force
[124] 1977 CLEE, Article 2
[125] Id, Art 3(1)
[126] Id, Art 3(2)

the operator to avoid liability.[127] But, if the operator is liable he is entitled to limit his liability.[128] However, a State party is free to, by its domestic law, provide for unlimited liability or higher liability limits.[129] A significant feature of this Convention is its Article 9 that allows for possible amendment of the limit of liability from time to time based on changing circumstances and the reality of the moment through a simple committee process. But the Convention failed to get the requisite assents and is not in force. Another regional convention on the issue of liability, also not yet in force, is the 1993 Council of Europe Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment[130] (The Lugano Convention) which aims to ensure adequate compensation for damage resulting from activities dangerous to the environment and provide ways of prevention and restoration.[131] It channels liability to the operator of a dangerous activity.

6.4 Nature of Liability

The nature of liability that is imposed by law for a tortuous act is very important to the victim in a bid to get redress for damage suffered. The law may determine whether liability should be based on fault or the mere fact of damage. Where liability is based on fault or breach of duty, it necessarily follows that to hold any one liable for damage there must be proof of fault or

[127] For instance, if damage results from acts of war, hostilities, civil war, a natural phenomenon of an exceptional, inevitable and irresistible character, the operator will not be liable. Also, where the victim's own negligence caused the damage the operator shall not be liable. Liability for damage resulting after a well has been abandoned for over five years shall not be the responsibility of the operator who abandoned the well, Id, Art 3(3) –(5)
[128] Id, Art 6(1) – (5), and in exercise of this right, the operator must constitute a fund for the total sum signifying the limit of his liability with a court or other competent authority in any one of the State Parties in which action is brought.
[129] Id, Art 15(1)
[130] 32 ILM 480 (1993)
[131] Id, Art.1

breach of duty. If legal principles in the traditional law of tort were to be followed, there would be no compensation for the injured party without such proof.

Bearing in mind that most of these activities are highly technical and dangerous and disaster may occur even with the best of caution and due diligence, it seems the attribution of fault might be inadequate and pose some difficulty for a potential claimant.[132] Hence, some commentators have argued that in the traditional law of fault based liability or responsibility, in the event of a disaster, it is 'tantamount to having the injured party bear the risk of the activity and thus engendering serious injustice'.[133]

The dynamic feature of law is that it is never completely insufficient in addressing problems confronting society.[134] Various legal regimes are making provisions that depart from the restrictive effect of fault based liability and allow injured parties to get redress without proving fault.[135] Beyond the advantage to claimants, the task of setting the relevant standards of

[132] Niels-J. Seeberg-Elverfeldt, op. cit., p.9

[133] Niels-J. Seeberg-Elverfeldt, op. cit., pp.10-11. However, this has changed as the idea of strict liability is incorporated into international legislations to impute liability on the operators of such dangerous activities without proof of fault. Though many of them are not in force, example of such are 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (in force 1968); 1962 Brussels Convention on the Liability of the Operators of Nuclear Ships (not in force); 1963 Brussels Agreement Supplementary to the 1960 Convention on Third Party Liability (in force 1974); 1963 Vienna Convention on Civil Liability for Nuclear Damage (in force 1977, to be replaced by 1997 Protocol, not in force); 1971 Brussels Convention Related to Civil Liability in the Field of Maritime Carriage of Nuclear Material (in force 1975); 1977 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources (not in force). 1992 Convention on Civil Liability for Oil Pollution Damage (in force 1996); 1992 Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (in force 1996); 1993 Convention on Civil Liability for Activities Dangerous to the Environment; 1996 Convention on Liability and Compensation for the Carriage of Hazardous and Noxious Substances by Sea; 1997 Protocol on Civil Liability for Nuclear Damage and Convention on Supplementary Compensation; 1999 Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Waste; 2001 Convention on Civil Liability for Bunker Oil Pollution Damage; 2003 Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters

[134] *Ubi jus ibi remedium* which means, where there is injury there is remedy.

[135] In the field of civil aviation, nuclear energy outer space and maritime law (shipping) conventions have been adopted at global and regional levels to depart from the traditions fault based liability approach to impose strict liability on the undertakings of these activities described as abnormally dangerous or ultra-hazardous; see Jenks, 'Liability for Ultrahazardous Activities in International Law', 117 Recueils des Cours 105 (1966) in Niels-J. Seeberg-Elverfeldt, op. cit., p.11. According to Jenks, characterising these activities as such "does not imply that the activity is ultra-hazardous (abnormally dangerous) in the sense that there is a high degree of probability that the hazard will materialize, but rather that the consequences in the exceptional and perhaps quite improbable event of the hazard materializing may be so far-reaching that special rules concerning the liability for such consequences are necessary if serious injustice and hardship are to be avoided" id at 107

reasonable care in very technical and complex workings of the oil and gas industry is relieved of the courts.[136]

When liability is strict,[137] culpability is not determined by fault or negligence but in undertaking the risk. In this way there is a fair spread of the possible consequences of improbable but potentially disastrous misadventure which makes "the burden of insurance or other provision of security for compensation in the event of misadventure a cost of the adventure"[138]

Though the notion of "abnormally dangerous" activities expressed by Jenks may not have contemplated offshore petroleum exploration and exploitation, recent incidents provide compelling evidence for such strict liability approach to be extended to it. Article 235 of UNCLOS on responsibility and liability for marine pollution did not suggest the application of strict liability, though it developed from principles 7 and 22 of the Stockholm Declaration that demand that States provide compensation for damage caused by human activities including oil and gas operations.[139]

The provision in the various regional conventions is not different. For instance, in the North-East Atlantic region, the OSPAR Convention while providing for application of polluter pays and precautionary principles in addressing marine pollution[140] from fixed and floating offshore platforms[141] made no indication of the nature of liability in cases of pollution incidents in offshore oil rigs. Also, the Bonn Agreement negotiated pursuant to Article 21 of OSPAR

[136] Boyle, A. E., supra note 7, at p.13
[137] Under the doctrine of strict liability, an injured party has no evidential burden of proving fault in the event of any injury or damage arising for an accident.
[138] Jenks, supra note 135, p.107
[139] See Nordquist, M. H., op. cit., p.401 (1991); Park, Patricia, supra note 26, p.96
[140] 1992 OSPAR Annex I, Art. 2(2). These obligations are much more mandatory and binding than the provisions of UNCLOS in view of the use of the word 'shall'.
[141] Id., Art. 5. See generally annex III that addresses prevention and elimination of pollution from offshore sources

Convention, in the event of transboundary marine pollution, did not address the issue of liability.

Under the Offshore Protocol for the Mediterranean Sea region, the nature of liability is left for further development by the parties. But, unlike the case of channelling of liability which had a fall back provision in the Convention in case parties neglect or fail to develop and adopt such regulation on liability,[142] there is no fall-back position in relation to the nature of liability in the Mediterranean Sea region. In the event of such lacuna, the applicable law might just be the traditional rules of tort applied in individual countries.

Similarly, the Helsinki Convention for the Baltic Sea does not make provision for liability but there is an undertaking by parties to develop and accept rules concerning responsibility for damage resulting from offshore oil and gas E&P. Such rule would among others include the "limits of responsibility, criteria and procedure for the determination of liability and available remedies."[143] Presently, there are no such regional rules on the nature of liability for accidental pollution from offshore petroleum E&P within the Baltic Sea.

6.5 Limitation of Liability for Damage from Offshore Operations

Liability may be used as a means of ensuring prevention of pollution and remedying damage but most regimes dealing with dangerous but lawful activities make provision for its limitation.[144] This is due to the fact that the vulnerability of companies in the face of unlimited liability could become disincentive for private capital investment. Especially in dangerous activities of general societal necessity and desirability such as shipping, nuclear energy and oil

[142] Barcelona Offshore Protocol, Art.27(1)&(2)(a)
[143] Helsinki Convention, Art.25
[144] In the maritime industry we have example of 1976 Convention on Limitation of Liability for Maritime Claims (LLMC) and in Nuclear we have the 1963 Vienna Convention on Civil Liability for Nuclear Damage as amended by the 1997 Protocol Art. V providing for limitation of liability

and gas. Moreover, the financial uncertainties created by unlimited liability could make it difficult for such ventures to secure insurance.[145]

However, all three regional regimes under discussion- the Barcelona Convention, OSPAR Convention and the Helsinki Convention- do not deal with liability and as such made no provision for limitation. Subject to any other convention that may be applicable to these regional seas, like an EU regulation or directive, it is individual municipal laws of States that may be applicable in the event of a liability claim.

Had the 1977 CLEE come into force the situation would have been different. That convention had provided that when the operator is liable he is entitled to limit his liability. In exercise of this right, the operator is to constitute a fund for the total sum signifying the limit of his liability with a court or other competent authority of any one of the State Parties in which action is brought.[146] However, a State party is free to, by its domestic law, provide for unlimited liability or higher liability cap.[147] These liability provisions are commendable as they create a minimum liability cap for the region while providing for stricter or more effective commitment through domestic legislation. As noted earlier, the liability cap is low but this concept of regulation is needed and could be replicated at the global level and all regional regimes. That is, a framework that creates minimum standards and obligations for States while granting liberty to States with higher capacity to set higher standards and rules suitable to their circumstances.

[145] Niels-J-Seeberg-Elverfeldt, op. cit., p.16
[146] Id, Art 6(1) – (5)
[147] Id, Art 15(1)

6.6 Compensation

One of the essential features of liability regime is its reparative function.[148] Where a liable party is unable to pay compensation, the goal would be defeated. Therefore, a functional liability regime, at least for risky and dangerous activities with potential serious environmental impact, should provide for guaranteed payment of prompt and adequate compensation.

The Mediterranean Offshore Protocol enjoins contracting States to grant offshore exploration and exploitation authorisation (licences) to only operators on the principle that they, inter alia, have the "technical competence" and "financial capacity" to undertake such activity.[149] Such financial capacity may, in view of present realities in offshore petroleum operations include the capacity to employ the best available technology and equipment for offshore operations. This is especially crucial in deep water and ultra-deep water operations. Also, application for such authorisation must be supported by insurance or other financial security to cover liability relating to compensation for possible damage caused by such offshore activity,[150] thus introducing the notion of compulsory insurance.[151] Where there is pollution damage, operators "shall be required to pay prompt and adequate compensation."[152]

Financial capability, though not specifically tied to liability, has been a requirement for authorisation for exploration and exploitation of mineral resources.[153] OSPAR and Helsinki Conventions for the North East Atlantic and the Baltic Sea respectively do not have such

[148] Wetterstein, Peter, 'Environmental Liability in the Offshore Sector with Special Focus on Conflict of Laws (Part 2)', Vol.23 Issue 6, *The Journal of Water Law*, 207, 208
[149] 1994 Offshore Protocol, Art. 4(1)
[150] Id., Arts. 7 and 27(2)(b)
[151] Raftopoulos, Evangelos, *'Sustainable Governance of Offshore Oil and Gas Development in the Mediterranean: Revitalizing the Dormant Mediterranean Offshore Protocol'*, p.6, 2010 available on line at http://www.mepielan-ebulletin.gr/default.aspx?pid=18&CategoryId=4&ArticleId=29&Article=Sustainable-Governance-of-Offshore-Oil-and-Gas-Development-in-the-Mediterranean:-Revitalizing-the-Dormant-Mediterranean-Offshore-Protocol accessed on 15 Jan. 14; see also UNCLOS Art.235(2)
[152] Mediterranean Offshore Protocol, Art.27(2)(a)
[153] For instance, financial standing is one of the qualifications for applicant seeking to explore the Area. See Art.4(2) of the Basic Conditions for Prospecting, Exploration and Exploitation, Annex III to UNCLOS

specific provisions requiring financial security as condition for granting authorisation for offshore exploration and production. This may change for EU countries in the three regions following the adoption of EU Directive 2013/30/EU on safety of offshore operations.

The 2006 ILC draft Principles enjoin States to ensure that compensation is promptly paid to victims of transboundary pollution. Furthermore, operators and entities should be made to provide financial security like insurance and encouraged to collectively establish industry wide fund; and where such measures are still inadequate the State is urged to make funds available to compensate victims and address the environmental disaster.[154]

6.7 Liability and Legal Standing

Once there is an accident it will raise different liability related issues - the party responsible for the accident, the liability of various actors in the E&P venture such as the well owner or licensee, the operator and contractors. There is also the issue of who has legal standing to institute action. In the event of an accident there are two points of liability- liability for breach of safety regulations and liability for harm caused to the environment, individuals and businesses.

The issue of whether liability is held by the operator or the owner of the block is determined by law and the terms of the license agreement. In most cases the responsible parties are the operator and the owner of the well. In cases where the block is owned by a single company that is also the operator, there will be no dispute on where liability lies as same company is both owner and operator. It could be complicated where the block is owned by several companies. The general practice in the industry is that the operator takes full and total control of operations

[154] See generally principle 4

and by implication is responsible for safety of the operations. Therefore, liability for the consequences of any breach of safety rules and pollution rests on the operator subject to being indemnified in deserving cases by co-owners of the block in line with their joint ownership agreements. Indemnity may also flow between operator and contractors.[155]

The liability issues might be different where the State is the owner of the block. State ownership of oil blocks is usually held through a National Oil Company (NOC). Most of these NOCs are incorporated as separate legal entities with power to sue and be sued in their names. Hence, it is the NOC that may be held liable for any accidental pollution, especially when it is the operator. In case of transboundary pollution, it is the State that may be held responsible for breach of its international obligation to prevent pollution, but as noted earlier States hardly resort to that. As international law stands, States are subjects of international law and cannot be compelled to submit to the jurisdiction of domestic courts in another State. Hence without development of international law of responsibility and liability it would be difficult to hold a State liable for environmental pollution arising from activities with the State.

In relation to breach of safety regulations, it is the regulator that has the legal standing to investigate if there has been any breach of safety regulations and apply sanctions or sue to enforce penalties for breach. For instance, in the Macondo blowout, the regulators sued BP for gross negligence in ignoring several safety precautions in the days preceding the blowout. But once there is accidental pollution everyone affected would have standing to seek redress and be compensated by the responsible party, be it a State owned corporation or a private company.[156]

[155] This was clearly demonstrated in the Macondo spill cases, see Offshore Energy Today, 'BP, Halliburton and Transocean settle Macondo claim', available at http://www.offshoreenergytoday.com/bp-halliburton-transocean-settle-macondo-claims/ last visited 8 September 2015; Halliburton Press Release, 'US Court Rules on Macondo Liability', 4 September 2014 available at http://www.halliburton.com/public/news/pubsdata/press_release/2014/corpnews-090414.html

[156] Various persons affected by the Macondo spill made claims against BP and were paid. See The Guardian, 'Judge Orders BP to Stick by Deepwater Horizon Pay out Agreements' 24 September 2014, available at

In the case of abandoned offshore installations the owner of the installation and not the operator would usually be responsible for accidental pollution resulting from incidents such as collision and hurricane. Ordinarily it is the responsibility of the owner to remove disused or abandoned installation and any environmental damage resulting from failure to fulfil such obligation would attract liability to the owner. The argument exists of a possible liability of States for the removal (decommissioning) of disused offshore petroleum installations. This liability is said to arise from old-styled Production Sharing Agreements (PSAs) that failed to make provisions that place liability on the IOCs with ownership of offshore oil and gas installations resting with the State.[157] Interestingly, international law places the obligation to decommission on the State that often moves it to IOCs by way of contract. Accordingly, where there is an accidental pollution from a disused offshore petroleum installation owned by the State as envisaged above, the State responsibility is not in doubt. In reality, IOCs may not rely on the strength of this legal position where this arises especially where a country still has abundant hydrocarbons for E&P, but may in the interest of continuing good relations, be willing to negotiate aimed at a reasonable solution to liability for decommissioning.[158]

However, the issue of responsible parties, possible liabilities in any given circumstance and the legal standing to sue may be made uncontroversial through the channelling of liability provisions in treaties, national laws and operational licenses and agreements.

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http://www.theguardian.com/environment/2014/sep/24/bp-ordered-deepwater-horizon-payouts-agreement last visited 8 September 2015

[157] Cameron, Peter, "Tackling the Decommissioning Problem", *Natural Resources & Environment*, 14(2), 1999. Cameron notes at page 121 that this is usually a surprise to governments that the much valued title to installations also brought liability. See also, Ayoade, Morakinyo Adedayo *Disused Offshore Installations and Pipelines: Towards Sustainable Decommissioning*, (The Hague: Kluwer Law International) pp.82-83 (2002).

[158] Martin, Tim "Decommissioning of International Petroleum Faculties: Evolving Standards and Key Issues", *OGEL* 5 (2003), available at: www.ogel.org/article.asp?key=765 last visited 8 September 2015

6.8 Equal Access to Justice in Transboundary Pollution from Offshore Petroleum Operations

UNCLOS, without providing any detail, makes it mandatory for States to make provision in their legal systems for prompt and adequate compensation or other relief for damage caused by pollution of the marine environment by persons under their jurisdiction.[159] But it provides no benchmark for prompt and adequate compensation nor a mention of any other reliefs that may be granted.

Principle 6 of the 2006 ILC draft Principles urges States to grant legal standing and access to justice and environmental information to any victim of incidents from hazardous activities irrespective of whether the victim is from the State of origin. Most significantly, the draft calls for adoption of global, regional or bilateral agreements to address specific hazardous activities to provide effectively for compensation, liability and response measure.[160] The idea of making adequate funds available through the specific industry and State fund as supplementary fund to the financial security provided by the operator is emphasized by the draft.[161] Similar suggestion on increased funding with contributions from industry to supplement any liability or security that may be provided by an offshore operator was made by Russia.[162]

In relation to access to justice for victims of pollution from offshore petroleum E&P activities, especially of transboundary impact, the Mediterranean Offshore Protocol strongly recommends that Parties "grant equal access to and treatment in administrative proceedings" to such persons in other States either in accordance with their legal systems or on the basis of an agreement.[163]

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[159] UNCLOS, Art.235(2)
[160] Principle 7(1) of 2006 ILC Draft provides that "Where, in respect of particular categories of hazardous activities, specific global, regional or bilateral agreements would provide effective arrangements concerning compensation, response measures and international and domestic remedies, all efforts should be made to conclude such specific agreements."
[161] Principle 7(2) of 2006 ILC draft
[162] The Embassy of the Russian Federation in Canada, 'Press Release, Global Marine Environmental Protection' 26 July 2010, available http://www.rusembassy.ca/node/439 last visited 02 November 2014
[163] Id., Art.26(4)

Conventions governing marine activities in North-east Atlantic and the Baltic Seas do not have similar provisions as the Mediterranean Sea regime.

The implication is that in the absence of a global convention requiring such mandatory provisions in domestic laws and regulations, a uniform level of access to justice in the case of a transboundary pollution from offshore petroleum operations is not guaranteed even in the developed regions such as the North Sea. However, if States adhere to the provisions of Article 235 of UNCLOS, there would be better access to justice and possibly adequate compensation for victims of transboundary harm resulting from offshore petroleum operations in virtually every region of the world.

6.9 Liability for Offshore Petroleum Operation under European Union Law

Most coastal countries in the Mediterranean, Baltic and North-East Atlantic regions are members of the European Union and thus subject to EU legislation.[164] Hence, in addition to the provisions of the various regional sea conventions, offshore oil and gas E&P activities are governed by EU acquis communautaire. In terms of liability there are two directives directly applicable to offshore oil and gas E&P namely Directive 2004/35/CE on environmental liability and Directive 2013/30/EU on safety of offshore oil and gas operations.

[164] EU Offshore Safety Directive, Point 50 of the Preamble

6.9.1 Directive 2004/35/CE on Environmental Liability

For the purpose of prevention and remedy of environmental damage, Directive 2004/35/CE on environmental liability provides that environmental liability shall be based on the polluter pays principle.[165] To this end preventive and remedial costs are to be borne by operators.[166] However, it does not vest right on private parties to compensation as a consequence of environmental damage or an imminent threat of such damage.[167] Also, it is inapplicable to claims for damage to private property, personal injury or economic loss.[168] Considering the extent of damage to both public and private property and business interests that are adversely affected by accidental pollution from offshore petroleum installation, the EU environmental liability Directive may not be of great help to victims of accidental pollution from offshore petroleum installations such as the Macondo accident.

Annex III of the Directive specifies the various activities covered by the Directive and offshore oil and gas operation is not listed as one. Nevertheless, the Directive may still be applicable to offshore oil and gas E&P when the activities cause damage to protected species and natural habitat and whenever the operator is at fault or acted with negligence.[169] Moreover, by incorporating the Directive on environmental liability in the 2013 Directive on safety of offshore oil and gas operations the former applies directly to liability issues in offshore oil and gas E&P.[170]

The environmental liability Directive is not applicable to circumstances covered by existing international instruments on liability for pollution like the 1992 Civil Liability Convention,

[165] EU Environmental Liability Directive 2004/35/CE, Art.1
[166] Id., Art.8(1)
[167] Id., Art.3(3)
[168] Id., Point 14 of Preamble
[169] Directive 2004/35/EC Art.3(1) and Annex III
[170] See Offshore Safety Directive, Arts. 7 and 38

1992 Fund Convention and the nuclear conventions.[171] However, limitation of liability by operators under the 1976 Convention on Limitation of Liability for Maritime Claims (LLMC) as amended by the 1996 Protocol and the 1988 Strasbourg Convention on Limitation of Liability in Inland Navigation (CLNI) are sustained under the Directive.[172] This does not necessarily mean that operators of offshore installations can limit their liability because the LLMC is not applicable to offshore installations engaged in oil and gas E&P activities.[173] Nonetheless, member States may adopt more stringent measures in prevention and remedying of environmental damage.[174]

Where a State has responded to an incident of environmental damage, the Directive provides for cost recovery by the competent authority within a 5 year limitation period.[175] However, it failed to provide for general access to justice which is subject to provisions of individual municipal laws.[176] In essence, the extent to which an individual may be able to get redress for pollution arising from environmentally harmful activities like offshore petroleum E&P is dependent on national laws that would determine standing of claimants, the burden and standard of proof required for a liability claim to succeed. Though the EU Directive on offshore safety amended the Directive on environmental liability it was specifically on its territorial coverage.[177]

[171] Directive 2004/35/EC Art.4(2)&(4)
[172] Id., Art.4(3)
[173] See LLMC as amended, Art.1 lists shipowner and salvors as persons entitled to limitation under the convention while Art.2 provides the type of claims covered by the convention. There is no mention of offshore oil and gas installations or operations
[174] Id, Art. 16
[175] Id., Art.10
[176] Id., Art.13
[177] EU Directive 2013/30/EU, Art.38

6.9.2 Liability under the EU Directive 2013/30/EU on Safety of Offshore Petroleum Operations

The issue of possible damage and the ability to settle such liability must be a big consideration of States from the moment an application for authorization to undertake offshore petroleum E&P is submitted. The EU Offshore Safety Directive provides that when considering applications for offshore oil and gas E&P, States are to examine the financial capability of the applicant, as required under Article 5(1) (a) of Directive 94/22/EC.[178] States must also verify the availability of evidence of adequate financial provisions made to cover possible liabilities from major accident. In so doing, there should be some level of certainty that such provisions would be effective from the start of operations before licences should be granted.[179]

The financial capability to settle liability resulting from possible accidental pollution is to be a *sine qua non* for the grant of licenses for offshore oil and gas E&P in all EU waters. This was unequivocal in the Directive which provides that "Member States shall require the licensee to maintain sufficient capacity to meet their financial obligations resulting from liabilities for offshore oil and gas operations."[180] The critical issue that may confront interested parties is the determination of sufficient capacity to meet financial obligations from liabilities. The Directive failed to provide the parameters for such determination and it is left entirely to the discretion of individual Member States.

In such circumstance, it will be difficult to guarantee uniform standard of financial capacity to meet liability obligations for all licensees of offshore E&P within European waters. That being the case, the intention of the Offshore Safety Directive to provide a relatively uniform

[178] Directive 94/22/EC of 30 May 1994 on the conditions for granting and using authorization for the prospection, exploration and production of hydrocarbon
[179] Directive 2013/30/EU Para. 10 of Preamble and Art.4 (3). This has been a requirement under Article 5(1)(a) of EU Directive 94/22/EC of 30 May 1994 on the conditions for granting and issuing authorization for the prospection, exploration and production of hydrocarbon
[180] Id., point 5 of Art.4(3)

operational standards within European waters to prevent major accidents, ensure effective response to emergency where accident still occurs and make available adequate compensation to pollution victims[181] may not be realized under the present Offshore Safety Directive.

The key provision on liability for environmental damage in the Offshore Safety Directive is Article 7 which mandates Member States to, without prejudice to the Environmental Liability Directive, ensure that the licensee is financially liable for prevention and remediation of environmental damage resulting from offshore oil and gas operations.

Thus Member States are to channel liability to the licensee or the operator whether the act concerned was done by the licensee or the operator or by other parties- contractors and subcontractors, equipment manufacturers and suppliers. However, the nature or form of liability is not classified in the Directive. This is a critical omission that is capable of creating varying standards for offshore petroleum operations in various regions of the EU. Making the licensee or operator the responsible party for any accidental pollution is not sufficient in itself in ensuring the polluter pays if the required level of proof of liability makes it difficult for victims to successfully claim damages and secure compensation.

Liability appears unlimited as there is no direct provision that places caps on liability. International conventions like the 1976 LLMC and the 1988 Strasbourg Convention on Limitation of Liability in Inland Navigation (CLNI) sustained under Directive 2004/35/CE[182] are not applicable to accidental pollution from offshore oil and gas E&P activities. However, with no clear directive on liability being limited or unlimited, States are at liberty to determine such in their municipal laws and regulations.

[181] Directive 2013/30/EU in point 17 of the Preamble lamented the good but inconsistently applied rules in the Union without integration of these rules. But the failure of 2013 EU Offshore Safety Directive to set parameters in the circumstances of liability will not change that situation.
[182] Directive 2004/35/CE Art.4(3)

The absence of detailed provisions on liability is particularly of great concern when one considers the possibility of a transboundary impact of a major hazard within EU waters. While there appears to be robust provision on transboundary emergency preparedness and response to accidental pollution,[183] the issue of liability in such circumstances is not addressed. Apparently it is left to individual EU Member to figure out. The Directive which was initiated and adopted as an EU legislative response in the aftermath of the 2010 Macondo disaster, focuses more on prevention and emergency response than liability issues.

Similarly, the provision on penalties for infringements of measures adopted pursuant to the offshore safety Directive are to be determined by individual Member States. They are expected to make the "penalties effective, proportionate and dissuasive".[184]

Individual Member States are to adopt legislations, regulations and administrative measures necessary to give effect to the directive by 19 July 2015.[185]

6.10 Industry Scheme on Liability for Offshore Accidental Pollution

Along with public international law frameworks there is the industry's response to the question of liability in offshore oil and gas E&P through a private scheme which is called Offshore Pollution Liability Agreement (OPOL).[186] Though it started as an agreement that applied only in the United Kingdom, it has been extended to other European Union countries and Norway. OPOL involves only private companies and currently has 133 members, 118 of which are UK based. The other companies are in the Faroe Islands, Greenland, the Netherlands, Norway and

[183] See Chapter VII of EU Offshore Safety Directive on transboundary effects
[184] EU Offshore Safety Directive, Art.34
[185] Id., Art.41
[186] It currently has the 2010 version. First came into force on May 1, 1975

the Republic of Ireland. Thus, all major petroleum operators in EU waters are parties to the agreement.[187] But offshore installations in some designated locations in the Mediterranean Sea or Baltic Sea are expressly excluded from the application of OPOL.[188]

Though OPOL is a private initiative and its membership is voluntary, signing on to the OPOL agreement is a condition precedent to the issuance of offshore exploration and exploitation licences in relevant countries including the UK.[189] This to some extent increases its potency and operators' willingness to sign on could be indicative of their willingness to take responsibility for consequences of their dangerous activities.

The agreement ensures that parties accept strict liability for pollution damage and cost of remedial measures. But OPOL does not cover remedial measures involving well control and measures taken to protect, repair or replace the offshore installation.[190]

The financial commitment of members is guaranteed by their provision of evidence of financial responsibility. OPOL rules for establishment of financial responsibility allow members to provide financial responsibility via insurance, guarantee or self-insurance. Any change in circumstance of the evidence of financial responsibility that undermines the credibility of the insurance must be reported to OPOL. Such insurance must be promptly replaced.[191] Self-insurance is acceptable from only companies having "one or more of the following credit or financial strength ratings: "A-" or higher from Standard & Poor's; "A-" or higher from A. M. Best; "A3" or higher from Moody's; "A" or higher from Fitch; and/or the equivalent from

[187] Allen, Jacqueline, op. cit., p. 94
[188] OPOL, Clause I(8)(c)
[189] Oil and Gas: Operatorship, available at https://www.gov.uk/oil-and-gas-operatorship#offshore-operators last visited 02 February 2015
[190] OPOL, Clause I(15)
[191] OPOL Form B Clause (1), (2) and (3)

another internationally recognised credit rating agency acceptable to the Association"[192] and every form of insurance provided by members must be verified.[193]

By Clause IV of the agreement, it makes available per incident a limit of $125 million for remedial measures and $125million for pollution damage. It also added an annual cap of US$500 million per party.[194] The annual limitation cap means that a party may not be able to rely on OPOL if it had been involved in two major incidents in a year. In essence, there may be times when claimants after a second major incident may not get the benefit of OPOL.

The liability provided by OPOL is limited to the amount pledged in OPOL. This does not necessarily mean that OPOL Members' liability for offshore accidental pollution is for all intents and purposes limited to the pledged amount. Claims which OPOL is unable to satisfy may be settled by the responsible operator through other means of civil liability settlement. In other words, despite the liability cap contained in OPOL, its members' liability for major hazard could be unlimited depending on other international or domestic regulations that may be applicable to the offshore installation. Where a claimant chose to benefit from the strict liability of OPOL, the claimant must accept the OPOL payment as full and final settlement of all claims even where the claim is more than OPOL liability cap.[195] Payments are made on the condition of claimant executing "necessary releases and other documents" and assignment of any right of action against a third party.[196] The implication is that where a claimant is not willing to accept and discharge the operator of any liability upon receipt of payment under OPOL, he may have to institute civil proceedings under municipal law. In which case the operator's liability would be determined by a national civil liability regime.

[192] OPOL Form B Clause (3)(i)
[193] OPOL Forms FR1-FR2, FR3 and FR4
[194] Oil & Gas UK, *Mandatory Financial Requirements for Oil Industry Operations in the UKCS*, p.3, available at http://www.oilandgasuk.co.uk/templates/asset-relay.cfm?frmAssetFileID=1170 last accessed on 20 June 2014
[195] OPOL, Clause VII
[196] Id.

Claims under OPOL may be brought by an individual, private or public institution or agency against the operator. It is the responsibility of the operator to settle such claims in the first instance in line with the terms of OPOL agreement.[197] However, where a member of OPOL defaults in settlement of proven claims, the other members of OPOL will make proportionate contributions to settle such claim. However, there are defences, similar to those contained in the 1977 CLEE that are open to an operator. For instance, there shall be no OPOL obligation if the damage is as a result of war or other natural disaster that is exceptional, inevitable and irreversible in character.[198] Also, where damage is wholly the result of actions or omissions by third parties, Government or its agency or the claimant there would be no OPOL obligation.[199] Moreover, if damage resulted wholly due to compliance with conditions and instructions imposed by the authorising State, no liability against the operator will arise.[200]

Claims must be made timeously as the operator's liability under the terms of OPOL is valid for one year from the time the cause of action arose.[201] Disputed claims are usually settled via arbitration under the rules of the International Chamber of Commerce in London.[202]

6.11 Conclusion

The only comprehensive global convention on maritime issues - the UNCLOS - failed to make detailed provisions on liability. There is still no global regulatory regime addressing liability in offshore petroleum operations. Article 235 only provides for general State responsibility and liability in case of failure to protect and preserve the marine environment. States are mandated

[197] OPOL, para 3, see Budiman, Arief, *'Liability for Offshore Oil Spillage: Strictly Settled'*
[198] OPOL, Clause IV(B)(1)
[199] OPOL, Clause IV(B)(2)&(3)
[200] OPOL, Clause IV(B)(4)
[201] OPOL, Clause VI
[202] Id, Clause IX

to have a legal system that provides for prompt and adequate compensation for victims of marine pollution from natural or juridical persons within their jurisdiction and cooperate in further development of international law of responsibility and liability. This provision does not actually create an international rule that holds States liable to pay compensation for any damage to the marine environment nor does it establish norms on liability and compensation for marine pollution. Rudiger Wolfrum refers to the liability provision in UNCLOS, Arts 232, 235 and 263 as embryonic in nature, and requiring further development. According to him it is an overstatement to say that UNCLOS provides for individual or state liability for environmental damage.[203]

While there is no global liability regime for accidental pollution some developments have taken place at regional and domestic levels prior and after the Macondo disaster. The EU Directive 2013/30/EU on safety of offshore operation being a good example of such developments.

At the international level there seems to be no political will to have an effective international instrument on liability from offshore petroleum E&P activities. This is demonstrated by the failure to enter into force even of accepted instruments such as the 1977 CLEE.[204] This creates uncertainty for victims and the industry when the harm is transboundary. For instance, the liability issues arising from the transboundary impact of the Montara oil spill are still unresolved.[205]

[203] Wolfrum, Rudiger, op. cit., p.130

[204] Basma, Shane, *The Regulation of Marine Pollution Arising from Offshore Oil and Gas Facilities – An Evaluation of the Adequacy of Current Regulatory Regimes and the Responsibility of States to Implement a New Liability Regime*, 26 A&NZ Mar. L.J 89, p.95-95 (2012). Other conventions that failed as a result of lack of political will includes the draft Convention on Offshore Mobile Craft. See Kashubsky, Mikhail, '*Marine Pollution From the Offshore Oil and Gas Industry: Review of Major Conventions and Russian Law (Part I)*', 152 Maritime Studies 1, p.3 (2007) noted that only few provisions on offshore oil and gas E&P can be found in international conventions.

[205] There has been unsuccessful meetings between the operators and Indonesian government officials over claims for damage to Indonesian waters from the Montara spill. See The Jakata Post, *Probe on Montara oil spill urgent: Experts*, 27 July 2012, available at http://www.thejakartapost.com/news/2012/07/27/probe-montara-oil-

The private initiative, OPOL reflecting most of the key ideas of the 1977 CLEE, is an example of what a liability regulation should address in the offshore petroleum industry. It channels liability to the operator, provides for strict liability and establishes a cap on liability. There is insurance by third party or self-insurance to guarantee prompt settlement of claims. It recognises the inadequacy or limitation of members' liability cap to satisfy all possible claims. As such, claimants may recover, whatever is unsettled by OPOL outside the OPOL mechanism, using civil liability rules provided by domestic laws. Whether or not to place cap on liability for damage resulting from major hazards in offshore petroleum operations is a crucial issue that needs serious consideration in any liability regime at both the international and domestic levels in view of possible implications on operators and the industry.

Incidents like Montara and Ixtoc I exposed the challenges of this continued absence of provisions on liability for marine pollution resulting from offshore petroleum E&P, especially in a transboundary context. This provoked Indonesia's proposal to the IMO Legal Committee to address issues of liability.[206] Similar desire for urgent coordinated and comprehensive regulation of offshore E&P at the international level was expressed by the Mediterranean Offshore Protocol Working Group following the Macondo incident of 2010.[207]

In the premise, the issue is how best international law can make provision for liability arising from accidental pollution from offshore petroleum E&P activities, especially when it is

spill-urgent-experts.html and Borthwick, D., *Report of the Montara Commission of Inquiry*, Montara Commission of Inquiry, 17 June 2010, p. 302-303 http://www.ret.gov.au/Department/Documents/MIR/Montara-Report.pdf

[206] LEG 97/14/1, of 10 September 2010, p.1

[207] A Legal Discussion on Civil Liability for Oil Pollution Damage Resulting from Offshore Oil Rigs in the Light of the Recent *Deepwater Horizon* Incident, 1st Offshore Protocol Working Group Meeting, Valletta, Malta, 13-14 June 2013, UNEP(DEPI)/MED WG.384/INF.6, P.37-39 (6 June 2013)

transboundary. The liability regime should implement the polluter pays principle and also serve as incentive to achieving better safety culture in offshore petroleum E&P.

CHAPTER SEVEN

INTERNATIONAL REGULATION OF ACCIDENTAL POLLUTION FROM OFFSHORE PETROLEUM EXPLORATION AND EXPLOITATION: THE NEEDED ADJUSTMENT

7.0 Introduction

Offshore operations are associated with significant risks to the environment, coastal businesses and biodiversity. While accidents of great magnitude such as the Deepwater Horizon and Ixtoc1 gained global attention, the reality is that oil spills occur on regular basis around the globe. Unfortunately, even serious accidents in developing countries do not receive enough international publicity. For instance, between 2001 and 2011 the Gulf of Mexico is said to have experienced 948 fires and explosions, 1550 human injuries and 60 human deaths.[1] The present state of affairs is that the advent of deep water petroleum operations increases the risk of accidental pollution even more.[2] Also, there is increased exploration activities in the Arctic with its peculiar environmental challenges.

Thus, the need to reduce risk and prevent major accidents is imperative. Major accidents in maritime activities such as deep water petroleum operations have possible international implications as the impacts could go beyond the territory of one state. Hence, there is need to further develop international regulations in addition to municipal legislation.

[1] Graham, Bob, et al., *National Commission on the BP Deepwater Horizon Oil Spill & Offshore Drilling, Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, p.3 (2011), available at http://www.gpoaccess.gov/deepwater/deepwater.pdf.

[2] Ross, William M., op. cit., p.7; Jayakumar, Shunmugam, 'The Continental Shelf Regime under the UN Convention on the Law of the Sea: Reflections after Thirty Years' in Myron H. Nordquist, John Norton Moore, Aldo Chircop, Ronán Long (eds.) *The Regulation of Continental Shelf Development: Rethinking International Standards* (Martinus Nijhoff Publishers) 3 (2013)

The shipping industry has sufficiently matured with the existence of comprehensive legal frameworks focused on preventing marine pollution, emergency preparedness and response, and liability for maritime accidents. More specifically, tankers are regulated mostly through global instruments adopted under the auspices of the IMO. On the contrary, accidental pollution arising from offshore petroleum operations suffer from inadequate global regulations, even where transboundary impact is involved.

Presently, there is a consensus among scholars, regulators, industry operators and even the political class on the need for improved regulation of offshore petroleum operations at the international level.[3] What appears not to be settled is whether such international regulation should be limited to regional instruments or there should also be global legal framework. The analysis of the present state of events and international law on regulation of accidental pollution from offshore petroleum operations allow identification and evaluation of possible options available to the international community. This work suggests what an effective international regulatory approach for prevention of accidental pollution from offshore petroleum operations, emergency response and liability and compensation for marine pollution and associated damage should be.

[3] Following the 2009 Montara incident, Indonesia submitted proposal at the 97th session of the IMO Legal Committee for a global convention on liability for transboundary pollution arising from such incidents offshore, see LEG 97/15, of 1 December 2010, p. 28; The EU in Directive 2013/30/EU pledged to support global effort for safety of offshore operations; White, Michael, op. cit., pp.23&26; The Proposal by President Dmitry Medvedev is presented by The Embassy of the Russian Federation in Canada, 'Press Release, Global Marine Environmental Protection' 26 July 2010, available online at http://www.rusembassy.ca/node/439 ; Rares, Steven 'An International Convention on Off-shore Hydrocarbon Leaks?' 26 A & NZ Mar L. J 10, 16 (2012)

7.1 A Workable Legal Framework for Accidental Pollution from Offshore Petroleum Exploration and Exploitation

The primary goal of a legal framework for offshore petroleum operations is to minimise risks of accident and prevent oil spills, as well as provide adequate response mechanisms to minimise the consequences in the event an accident still occurs. There must also be a workable liability regime, especially in cases of a transboundary damage. While the goal of such a venture is clear, it is necessary to find a regulatory scheme that would best address the issues of prevention, emergency response and liability for accidental pollution from offshore petroleum operations.[4] Having exposed the inadequacy of binding global norms, regulations and standards, for offshore operations, an unresolved issue is the international organisation that would be best suited to develop such global rules. Also, the question whether international regulation of offshore accidental pollution should be limited to regional agreements or also include a global treaty is fundamental.

7.2 Regional Regulation of Offshore Accidental Pollution

Offshore petroleum operations and installations are located within the continental shelf where huge unexplored petroleum reserves are mostly found and coastal States exercise jurisdiction over such maritime zones.[5] But coastal States have an international obligation to prevent pollution of the marine environment, including from seabed oil and gas activities. In most maritime regions coastal States have, in a bid to collectively protect their common sea, adopted conventions and protocols aimed at preventing pollution of the marine environment. However,

[4] Bush, Brittan J., 'Addressing the Regulatory Collapse behind the Deepwater Horizon Oil Spill: Implementing a "Best Available Technology" Regulatory Regime for Deepwater Oil Exploration Safety and Cleanup Technology, 26 J. Envtl. L. & Litig. 535, 548 (2011)

[5] Gavouneli, M., op. cit., p.3; Brown, Chester, 'International Environmental Law in the Regulation of Offshore Installations and Seabed Activities: The Case for a South Pacific Regional Protocol' 17 Australian Mining & Petroleum L. J. 109, 136 (1998)

as was demonstrated, only few regions have instruments specifically governing pollution from offshore petroleum operations.

The Helsinki Convention for the Baltic Sea, the Barcelona Convention and its Offshore Protocol for the Mediterranean Sea and OSPAR Convention all have provisions for prevention and control of marine pollution from seabed activities. But it is only the Offshore Protocol for the Mediterranean Sea that contains detailed provisions for regulation of offshore oil and gas operations. This too, needs amendments to meet the present and future challenges of offshore operations. Similar instrument outside the three regions under consideration is the 1978 Kuwait Regional Convention[6] and its 1989 Protocol concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf.

Obviously, the four sea regions in the EU are not at par in terms of regulation of offshore oil and gas operations, especially with regard to prevention, emergency response and liability for accidental pollution. It is expected that with the EU Directive on Safety of Offshore Operations, the disparity in the regulation of offshore activities in these regions would be bridged to a large extent. Improvement can be ensured by either amendments to the regional conventions or adoption of protocols on offshore safety because not every country in these regions is a member of the EU and as such not bound by the relevant EU directives. On the other hand, many oil rich regions and sub-regions such as the Gulf of Guinea and the Gulf of Mexico lack detailed regional or sub-regional instrument regulating offshore oil and gas operations.

While it is understandable that different sea regions have their peculiar problems and States within these regions need to co-operate and collaborate in the prevention of pollution, the basic

[6] 1978 Kuwait Convention, 1140 UNTS 133

elements of legal framework necessary for prevention of accidents in offshore petroleum operations are similar. For instance, technical capability and financial capacity of operators, the need for installation of effective equipment, requirements for well cementing and trained personnel need not vary from region to region. Regions may choose to harmonise their policies with regard to the granting of licenses and a firm requirement for environmental impact assessment (EIA) especially in a transboundary context.[7]

Over the years scholars opined that because offshore installations are situated under the jurisdiction of States there was no need to regulate offshore petroleum activities using global instruments.[8] This approach was based on the premise that it is better for States that share same regional seas to adopt regional conventions and protocols to regulate marine activities within such regions. Even at that, it is only the Mediterranean Sea and the Persian (Arabian) Gulf areas that have protocols on offshore oil and gas operations.

The EU Directive on Safety of Offshore Operations is a bold effort to establishing a coherent legal regime for offshore oil and gas operations in the EU. As a post-Macondo instrument, the Directive is quite detailed in providing measures for prevention of major hazards or accidents and calls for a collaborative emergency preparedness and response mechanism. However, it failed to make any provisions on liability that are tailored to offshore oil and gas operations. Liability issues are to be resolved on the basis of the 2004 EU Directive on environmental liability.[9]

[7] Brown, Chester supra note 5, pp.135&137
[8] See Gavouneli, M., op. cit., p. 43
[9] See Art.7 of EU 2013 Directive on Safety of Offshore Operations

The EU Directive on safety of offshore operations will be applicable to most countries in the Northeast Atlantic, Mediterranean and Baltic Sea regions.[10] However, its provisions could have wider impact if EU members in each of these regions initiate review and amendment of the regional sea conventions to bring them, at the least, at par with the benchmark of the Directive. Also, now that the consequences of the Macondo blowout are still fresh, it is time for regions without multilateral agreements on offshore petroleum operations to negotiate and adopt similar instruments.[11]

In essence, an expansion of regional sea regimes is essential in international regulation of offshore petroleum operation. However, where the transboundary impact of an offshore accident is on the high seas beyond State jurisdiction a regional instrument would not address the damage and liability implications. Unfortunately, the question of possible impacts of offshore activities on the high seas has never been addressed as States are more concerned with damage to their territories or jurisdiction.

Some scholars assert that "improving offshore safety through relevant regime building at the regional level seems to be the most practical and realistic option."[12] Accordingly "such regionalization will allow countries sharing the same maritime area and usually with similar economic potential to jointly develop regulatory regimes that reflect their interests and capabilities."[13] However, irrespective of the level of regulation at the regional level it may not provide uniformity of standards in health, safety and environment issues on a global scale. If

[10] Id., Para.50 of Preamble
[11] UNEP could help coordinate the process to encourage development of such regional instrument on offshore petroleum operation.
[12] Vinogradov, Sergei, 'The Impact of the Deepwater Horizon: The Evolving International Legal Regime for Offshore Accidental Pollution Prevention, Preparedness, and Response' Ocean Development & International Law, 44:4, 335-362, at 352 (2013)
[13] Id.

nations and regions are left to regulate offshore operations to "reflect their interest and capabilities" the implication would be that less developed regions and nations might have ineffective regulations. In such circumstances safety may be compromised; there will be inadequate response to emergency and the polluter may escape payment for preventive measures and compensating environmental damage. Uncontrolled pollution of the marine environment in any sea region could potentially harm the biodiversity of the oceans and that should be a concern for all nations.

Regional instrument on regulation of accidental pollution from offshore petroleum operations remain relevant with or without a global regulation in this regard. Where there is global regulation, regional instruments would be used to amplify and tailor provisions of global regulations to the circumstances and peculiarities of the region. But in the absence of a global regulation, a regional instrument should set effective standards necessary for prevention of accidental pollution in offshore petroleum operations.

7.2.1 Enforcement of EU Directive 2013/30/EU and the Regional Conventions

EU directives are binding as to the result to be achieved but allow member States to decide the form and methods of achieving the set goal. However, directives have some level of direct effect that enables individuals to rely on them, especially in cases against the State.[14] In essence once a directive is validly enacted every EU member is bound to take steps to regulate its national activities aimed at achieving the result stipulated in the directive.

[14] Craig, Paul and de Burca, Grainne, EU Law: Text, Cases, and Materials 5th Edition (Oxford University Press) p.106 (2011); Article 288 of the Treaty on the Functioning of the European Union (TFEU)

In relation to the EU Directive on safety of offshore operations which "establishes minimum requirements for preventing major accidents in offshore oil and gas operations and limiting the consequences of such accidents",[15] Member States are to bring into force all legislative instruments and administrative process necessary to comply with the Directive not later than 19 July 2015.[16]

In recognition of the fact that not all countries within the four marine regions covered by the Directive are members of the EU, the Offshore Directive urged the Union as a matter of priority to cooperate and strengthen coordination with third States that have sovereignty or sovereign rights and jurisdiction over marine waters in such marine regions. Such cooperation should include regional sea conventions.[17]

Provisions of the Directive are applicable in a large number of countries which are parties to the OSPAR Convention, Helsinki Convention and the Barcelona Convention. This creates possible overlap between the provisions of the regional regimes and the Directive. The EU Member States in those regions would, in line with the Directive, update their national regulations and administrative provisions to meet the demands of the EU Directive. This will definitely impact positively on the regions, especially the Baltic Sea and the North East Atlantic regional sea regimes where EU Member States form the majority of contracting parties. However, this may create disparity in the regulation of offshore operations within the regions between EU Member States and other States in the regions that are not EU members.

With the commitment of the EU to encourage safe offshore oil and gas operations in and outside EU waters it is expected that its members will champion changes to the existing legal regimes

[15] Directive 2013/30/EU, Article 1(1)
[16] Id, Art.41. Though by virtue of Art.41(3)-(5), some Member States which have not licenced offshore operations and those that are landlocked are exempt from most obligations of the directive save Article 20, 32 and 34
[17] EU Directive on safety of offshore operations, Preamble para.50

in the Baltic Sea, North-east Atlantic Ocean and Mediterranean Sea regions. Anything short of that could be counter-productive to the overall goal of the Directive.

7.2.2 The Impact of EU Directive 2013/30/EU on Global Offshore Operations

The provisions of Offshore Directive indicate what is expected of European oil and gas companies in other regions of the world. Paragraphs 36, 37 and 38 of the Preamble give an indication of the intentions of the Directive. They provide that best global practices require licensees, operators and owners to take primary responsibility for controlling risks in their activities, including actions or omissions of contractors. While activities are to be conducted worldwide in accordance with best practices and standards, licensees, operators and owners must have a corporate major accident prevention policy that should be implemented consistently in and outside of the Union.

However, there are no binding obligations to this effect. "Responsible operators and owners should be expected", "it would be desirable for operators and owners" and "as far as possible" are all clauses that do not elicit compulsion. Moreover, their actions are expected to be "within the applicable national legal framework" which in many cases are standards lower than those set by the Directive. Curiously, Paragraph 41 of the Preamble goes to state that Member States are not able to enforce rules outside the Union. This does not help the desire to make European companies act responsibly in operations outside the EU. Member States should be required to put in place mechanism for ensuring that parent and subsidiary companies linked to their States keep to the relevant international best practice expected of a responsible operator at all times in and outside Union waters.

Instead, the substantive rule of the Directive titled "offshore oil and gas operations conducted outside the Union" provides that "Member States shall require companies registered in their territory and conducting, themselves or through subsidiaries, offshore oil and gas operations outside the Union as licence holders or operators to report to them, on request, the circumstances of any major accident in which they have been involved."[18] This duty has little to do with the standard of operation. In essence, the Directive does not impose an obligation on Member States to require companies registered in their territory and conducting, by themselves or through subsidiaries, offshore oil and gas operations outside the Union to apply same international best practice as in EU waters.

The European Commission is expected to promote cooperation and coordination with third countries within the same marine regions as Member States, as well as encourage high safety standards for offshore oil and gas operations in relevant global and regional fora, including those involving Arctic waters.[19] But how does the Union support high safety standards globally when it fails to make it mandatory for Companies registered in the EU to observe high safety standards in all their operations in and outside EU waters irrespective of low national standards in some third countries? The Commission may need to see to the adoption of a global treaty that calls for high safety standards for offshore operations, including those in Arctic waters.

7.3 OPOL and Global Offshore Petroleum Operations

The Oil Pollution Liability Agreement (OPOL) which involves all offshore oil and gas operators in the UK and North Sea is the only existing regulatory framework dealing with liability for accidents from offshore operations. OPOL establishes strict liability for any

[18] Directive 2013/30/EU, Article 20(1)
[19] Directive 2013/30/EU, Article 33

incident, thus taking away requirement for proof of fault. Burden of proof has always been the undoing of many victims of pollution, especially in developing countries where there is lack of industry knowledge and capacity even on the part of the regulatory agencies.

OPOL members' pledge of USD250 million liability per incident may not be sufficient to address liability arising from major offshore incidents like the Deepwater Horizon.[20] OPOL can improve and seems willing to improve as the current liability cap was a response to the 2010 Deepwater Horizon incident in the Gulf of Mexico following an emergency meeting in August 2010.[21] It also added an annual cap of US$500 million per party.[22] Presently OPOL coverage is limited to the North Sea.[23] OPOL definitely needs to open up membership and expand its coverage.

As part of the industry's contribution to safety of offshore oil and gas operations OPOL would have a better international impact if it expands its membership and coverage, first to other European waters and then beyond Europe. Such a move should be welcomed by most oil and gas producing countries, especially developing ones that find it difficult to enforce pollution regulations. An acceptance of a strict liability regime by offshore operators would entice them to adopt safer technology and operational standards regardless of the location of the installation and irrespective of applicable domestic regulations.

[20] Smith, Marissa, 'The Deepwater Horizon Disaster: An Examination of the Spill's Impact on the Gap in International Regulation of Oil Pollution from Fixed Platforms' 25 Emory Int'l. L. Rev. 1477, 1493-94 (2011)
[21] Energy & Climate Change Committee, UK Deepwater Drilling - Implications of the Gulf Of Mexico Oil Spill, 2010-1 H.C. 450-1, at *4.5.3* (UK)
[22] Oil & Gas UK, *Mandatory Financial Requirements for Oil Industry Operations in the UKCS*, p.3, available at http://www.oilandgasuk.co.uk/templates/asset-relay.cfm?frmAssetFileID=1170 last accessed on 20 June 2014
[23] Id. Only applications from operators of offshore facilities located in Denmark, Germany, France, the Republic of Ireland, the Netherlands, Norway, the Isle of Man, the Faroe Islands and Greenland are entertained. OPOL membership and coverage is so restricted that within Europe it does not apply to any offshore facilities located in the Baltic or Mediterranean Seas

On the other hand, although most operators in developing countries are usually subsidiaries of companies which are already members of OPOL, OPOL may not be willing to admit such operators whose technical capacity cannot be guaranteed. Moreover, parent companies from Europe may be reluctant for their subsidiaries to join the OPOL regime because of a high liability cap. It is interesting to note that all operators in the UK and North Sea are members of OPOL not necessarily by choice but it is a required condition for operational license in the UK continental Shelf.[24]

In developing countries where legal process is slow and high burden of proof under traditional tort law is placed on victims, huge claims could be avoided by powerful IOCs. Also, considering the lack of capacity on the part of regulators, most IOCs operating in developing countries escape proper sanctions for breach of environmental regulations and standards that cannot go unpunished in developed regions like the North Sea or the Gulf of Mexico. For example, the actual amount of oil that escaped into the sea in the Bonga oil field accident in the Gulf of Guinea off the coast of Nigeria in December 2010 could not be identified by the government agency, the Directorate of Petroleum Resources. The figure stated is that reported by Shell, the operator.[25] This claim was never verified by the Nigerian regulators and environmental agencies including the National Oil Spill Detection and Response Agency (NOSDRA).

While BP voluntarily pledged and made available USD20 billion to settle claims in the Macondo blowout few weeks into the incident, Shell has not paid any sum for pollution from

[24] Membership of OPOL is required of all operators who apply for licences for offshore oil blocks in the UK.
[25] Shell reported that about 40,000 barrels of oil were lost to the environment in the Bonga spill of December 20, 2012. A figure that is disputed. See 'More Oil Spilled in Bonga than Shell Reported' Premium Times, 29 December 2011,c available at http://premiumtimesng.com/business/3250-More-oil-spilled-Bonga-than-Shell-reported.html last visited on 20 June 2014

the Bonga field accident after more than three years.[26] In such circumstance it is unlikely that IOCs would be willing to extend their financial commitment under OPOL to operations by their subsidiaries in developing countries, more so, when the profit level of their subsidiaries would reflect in the balance sheets of the parent companies in Europe and America. Nevertheless, in line with its 2013 Directive on safety of offshore operations that urged European IOCs to employ same level of safety measures in their operations outside EU waters, EU Member States can encourage OPOL to expand its membership beyond the North Sea. Though OPOL's present liability cap of US$250 million is not entirely adequate,[27] its membership would instil some level of high safety culture in all operators that sign up to it globally. Thus, an increase in the liability cap will do much more.

However good OPOL provisions might look, the agreement remains a private arrangement among operators to the benefit of potential victims of their high risk venture. It ordinarily does not confer any right on a third party in the way a binding legal instrument would do.[28] Where OPOL fails to implement its agreement it will be an uphill task for a victim to successful seek its enforcement. Hence, though the expansion of OPOL's membership would have positive effect on safety of offshore oil and gas operations, an international binding agreement with global spread appears to be the best guarantee of a liability regime that would act as a preventive measure against serious environmental damage caused by an offshore accident.

[26] The Guardian Newspaper, Bonga Oil Spill: NOSDRA Orders Shell to Pay $3.6bn to Affected Communities, 26 August 2015, available at http://www.ngrguardiannews.com/2015/08/bonga-oil-spill-nosdra-orders-shell-to-pay-3-6bn-to-affected-communities/ last visited 27 August 2015

[27] Smith, Marissa, supra note 20, p. 1505

[28] Some have argued that private compensation schemes like OPOL and IOPC conflict with domestic liability laws that make them less effective as global agreements. See Smith, Marissa, supra note 20, p 1505; de Gennaro, Michael A., 'Oil Pollution Liability and Control under International Maritime Law: Market Incentives as an Alternative to Government Regulation' 37 Vand. J. Transnat'l L. 265, 269, 272 (2004)

7.4 Regulation of Offshore Accidental Pollution through Global Instruments

In international practice global conventions have been negotiated to address environmental challenges that are perhaps considered to be of global concern that need common, collective and global action. These include multilateral environmental agreements such as the Convention on Biological Diversity,[29] United Nations Framework Convention on Climate Change,[30]1985 Vienna Convention for the Protection of the Ozone Layer[31] and the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer.[32] There are maritime activities that are regulated by global instruments under the auspices of the IMO, prominent among which is MARPOL 73/78. Following the Macondo blowout of 2010 there has been a renewed call for a global binding instrument to regulate offshore petroleum operations. However, there is no consensus that a global regime is required to address the challenges of prevention, emergency preparedness and response, and liability for accidental pollution from offshore activities. This scepticism is coupled with the fact that States more often than not fail to anticipate international ecological needs and address them. Committed negotiations and adoption of requisite agreements take place only after a major disaster. There was one- Macondo, but no negotiations on agreements.

Presently, national efforts alone are not capable to provide effective regime of preventing and controlling offshore accidental oil pollution globally. Domestic regulations may at best control conduct of its nationals worldwide,[33] and establish environmental liability for damage within the State's territorial waters, EEZ and continental shelf. But when accidental pollution from an

[29] 31 ILM 822 (1992), adopted on 5 June 1992 and entered into force on 29 December 1993
[30] 1771 UNTS 107, adopted on 9 May 1992 and entered into force on 24 March 1994
[31] 26 ILM 1529 (1985) entered into force on 22 September 1988
[32] 26 ILM 154 (1987), entered into force on 1 January 1989
[33] In reality, the nationals and IOCs from developed countries when operating in other countries, especially in developing countries, rely on the domestic laws of their operating country in defence of most of their actions that fall below best practice and that is not the standard acceptable in their home countries. In cases of bribery, human rights abuse, the US under the Alien Torts Act could hold their companies accountable for wrong doing outside the US. Unfortunately, it does not translate to holding them responsible for accidental pollution and other negative impacts of the activities they engage in.

offshore installation in one State impacts on the high seas or territorial waters of another State, emergency response and liability can only be addressed through some form of international agreement or arrangement.[34]

By its very nature, business wants favourable investment climate. In cases of natural resource exploitation some multinational companies seek to operate in jurisdictions where they not only make profit but, where possible, maximize profit at the expense of the environment. In the absence of global regulation of offshore operations, IOCs may apply different standards in their offshore operations, especially in developing countries with lax regulations and inadequate technical and institutional capacity to monitor and effectively regulate the activities. The need for uniform global standards in the exercise of the obligation to prevent, reduce and control pollution of the marine environment from any source is provided for in Article 194(1) that mandate States to "endeavour to harmonize their policies in this connection." UNCLOS did not provide details and as such a new global instrument on safety of offshore operations would be ideal.

The OPRC provides a global minimum for emergency preparedness and response to accidental pollution from offshore operations. In view of the magnitude of spill that could result from accidents in offshore petroleum installation, as experienced in the Macondo incident, an improvement should be made to the OPRC. While improvement is needed in the global regime it does not necessarily have to be a new treaty. An amendment to the OPRC through the IMO or Conference of the parties as provided in Article 14 of the Convention may improve emergency preparedness and response at the global level. Such an amendment should be based on research on the state-of-the-art of oil pollution preparedness and response as demanded by

[34] Ross, William M., supra note 2, p.23

Article 8 of OPRC and take into cognisance current technology in the offshore petroleum industry.

In recent years there has been a growing expression of a need for global regulation of offshore operations to address liability arising from accidental pollution. For instance, following the 21 August 2009 Montara blowout in the Australian EEZ, Indonesia submitted at the 97th session of the IMO Legal Committee a proposal to add a new work programme to address liability and compensation for oil pollution damage resulting from offshore petroleum operations.[35] With Montara and the Deepwater Horizon as reference points, Indonesia contended that an international convention on such liability was the best solution. Indonesia proposed a regime of strict liability channelled against the owner or operator of the platform or installation and possibly a supplementary fund. In considering the proposal, the Committee was divided. Countries in support of the proposal admitted the existence of an international regulatory gap and contended that prompt measures were needed to fill the lacuna. They noted that such oil pollution knows no borders and global regulation was needed.[36] But the Norwegian delegation expressed doubts about the relevance of any international regime dealing with the issue.

The Norwegian delegation opined that since offshore oil and gas operations are undertaken within the continental shelves under the jurisdiction of coastal States they differ from shipping where vessels move from one jurisdiction to the other. But this argument is not sufficiently persuasive. Offshore operations have moved from shallow waters into ultra-deep waters possibly outside the EEZ of coastal States. In any event, while offshore installations are usually static, oil spills in case of accidents moves as it wills. There is always a possibility of such spill spreading beyond the coastal State boundaries to the high seas or areas under the jurisdiction

[35] LEG 97/14/1, of 10 September 2010, p. 1.
[36] Malaysian delegation emphasised the gap in relation to transboundary pollution and expressed need to fill such gap; Australia that had the Montara incidents gave her support to the proposal ; see LEG 97/15, of 1 December 2010, p. 28;

of neighbouring countries. Moreover, the fact that an activity is undertaken only within national boundaries has not stopped the global community from regulating such activities by adoption of universally applicable rules in such areas as biodiversity, climate change or nuclear energy. The global regulation with generally acceptable international standards of operation should be adopted to promote global protection of the marine environment and its biodiversity that would be impacted by accidental pollution from uncontrolled or unilaterally chosen levels of safety in offshore petroleum E&P.

Unfortunately, no decision was taken to begin a process of developing global regulations.[37] Some comments at the IMO Legal Committee meeting suggested that in order to undertake work based on the Indonesian proposal it had to consider international and regional instruments already in existence as well as the Russian proposal on a global initiative to protect the marine environment submitted by the Russian Federation in the 2010 G20 Summit held in Canada.[38] During the G20 summit President Dmitry Medvedev of the Russian Federation announced a proposal to establish an international mechanism for preventing and liquidating offshore accidents. He suggested that major international companies involved in oil production should pay a percentage of their profits into a special consolidated fund and make payments that would be used to insure against these kinds of risks.[39]

The Committee further noted that Strategic Direction 7.2 of the Organisation's Strategic Plan refers only to "shipping" and does not cover pollution caused by offshore oil exploration and exploitation activities.[40] A recommendation was then made to accommodate pollution for offshore operations in the following terms:

[37] Id., p.29
[38] Report of the Legal Committee on its Ninety-Seventh Session, LEG\97\15.doc, para 14.8
[39] The Proposal by President Dmitry Medvedev, supra note 3
[40] LEG\97\15.doc, para 14.11

> "IMO will focus on reducing and eliminating any adverse impact by shipping or by offshore oil exploration and exploitation activities on the environment by ... developing effective measures for mitigating and responding to the impact on the environment caused by shipping incidents and operational pollution from ships and liability and compensation issues connected with transboundary pollution damage resulting from offshore oil exploration and exploitation activities."[41]

Despite the above recommendation, at the 99th and 100th meeting of the IMO Legal Committee the Indonesian proposal was set aside as the Committee was much more disposed to encouraging bilateral and regional arrangements as it saw no compelling reason for developing a global convention on liability and compensation relating to offshore oil and gas operations.[42] Subsequently, the Government of the Republic of Indonesia promoted discussion of a convention within the IMO. They held an International Conference on Liability and Compensation Regime for Transboundary Oil Damage resulting from Offshore Exploration and Exploitation Activities in Bali in September 2011. Presently, the IMO is not keen on pursuing this objective[43] as there is no agenda before the IMO to initiate such global instrument.

However, the regulatory gap is acknowledged by both scholars and politicians. The ultimate challenge is the political will to initiate processes for the adoption of relevant instrument to regulate offshore operations globally. Most global instruments on environmental protection are negotiated with consideration accorded to developing or poorer nations through the application of the principle of common but differentiated responsibility. Such approach could be adopted

[41] LEG\97\15.doc, para 14.12
[42] IMO, Report of the Legal Committee on its ninety-ninth session, LEG 99/14, 24 April 2012, Paragraph 13.17 IDDRI Report 'Seeing Beyond the Horizon for Deepwater Oil and Gas: Strengthening the International Regulation of Offshore Exploration and Exploitation' Study No 01/14 February 2014 by Julien Rochette (IDDRI), Matthieu Wemaëre (Attorney at Law), Lucien Chabason, Sarah Callet (IDDRI), P.26 http://www.iddri.org/Publications/Collections/Analyses/ST0114_JR%20et%20al._offshore%20EN.pdf last visited on 12 October 2014
[43] Rares, Steven , supra note 3, p.11

in this case. The thesis will next briefly highlight some possible odds against a global instrument and how to address those odds and achieve an effective international regime for accidental pollution from offshore petroleum operations.

7.4.1 Odds against Global Regime for Offshore Accidental Pollution

There are obvious challenges to negotiation and adoption of a global instrument to regulate offshore petroleum operations. First is the existence of variable geographical contingencies of regions of the world. This is the basis for some, like O'Connell, not to see reason why global regulations, rules and standards should govern pollution from offshore petroleum operations. He observed that it was obscure for UNCLOS to have made reference to international regulations, rules, standards and recommended practices and procedures in Article 208(3) since at the time of the adoption of UNCLOS the only rules and standards existing were regional.[44] But the reference was made in view of Article 208(5) that imposes obligation on States to further develop international regulations, rules and standards.

Similar sentiment was expressed by Gavouneli who argued that "great geographical differences between various regions make global cooperation complicated and unnecessary".[45] Gavouneli is of the opinion that UNCLOS seems biased in favour of regional regulation due to existing regional efforts.[46] But it was also an acknowledgement of the absence of global regulations. Hence, UNCLOS being an umbrella instrument, urges parties to develop international

[44] O'Connell, D. P., *The International Law of the Sea*, Shearer, I. A. (ed), Vol.II (Clarendon Press Oxford), p.1017 (1984)
[45] See Gavouneli, M., op. cit., p. 43
[46] Id.

regulations, standards and rules through competent international organisations for prevention, control and liability for pollution arising from seabed activities.[47]

Another argument against a global instrument is the presumption that it is easier for States in a region to take collective action due to the level of understanding that enable parties to agree on terms suitable for the limited number of States in the region. Admittedly, global conventions are very difficult to negotiate given the multitude of States necessary to agree on complex standards on subjects that their full ramifications may at times not be completely understood.[48] This involves compromises that may water down the essence of such regulations. Moreover, no organised constituency exists at the international level to press for these regulations as neither IMO nor UNEP has taken it as part of their work plan. Also, countries are reluctant to agree on international regulation of activities conducted within their national borders due to concerns that they may lose significant proportion of control over such economic activities.

Despite these and other valid concerns about a global regime, it is still possible, if there is a will, as exhibited in other international environmental concerns. As White, rightly observed, "there are numerous but complex issues that an international convention can address and as it has been done with other complex international issues this is also achievable."[49] A good approach would be adoption of two global instruments: First should be a framework convention on safety of offshore petroleum operations for the prevention and control of marine pollution. The convention may contain obligations similar to those undertaken by parties to the Convention on Nuclear Safety.[50] While the Convention on Nuclear Safety might not be the

[47] UNCLOS, Arts.194(1), 199 and 208(4)&(5)
[48] Rose, William, op. cit., p. 5; see Livingston, D. "Pollution Control: An International Perspective," *Scientist and Citizens*, No.10 (September 1968)pp 172-182; Wolman, A "Pollution as an International Issue", *Foreign Affairs*, No.47 (October 1968) pp 164-175; Ross, W. "The Management of International Common Property Resources", *Geographic Review*, No.61 (July 1971) pp 325-338
[49] White, Michael QC, op. cit., p.26
[50] Legal Series No. 16, IAEA, Vienna (1994)

best of regimes or that successful[51] it contains fair binding obligations on safety of nuclear installations to prevent nuclear accidents. With increase in offshore petroleum E&P, a commitment to high safety standards by all nations is essential for the protection of the marine environment. Therefore, a global consensus to adopt similar binding obligations on safety of offshore petroleum operations to prevent major hazards would be a good start for a global instrument on offshore petroleum E&P. The other instrument should focus on liability to ensure that the polluter pays and victims of accidental pollution have their claims fully and promptly settled. Interestingly, there are regional instruments that look forward to the existence of global regulation as the next section will demonstrate.

7.4.2 Regional Support for a Global Action

States sharing the same region are usually able to put in place conventions and protocols for the protection of their regional seas but they are quite aware that regional efforts alone might not effectively address the issues of prevention and control of marine pollution. For instance, parties to the OSPAR Convention resolved that "further international action to prevent and eliminate pollution of the sea should be taken without delay, as part of progressive and coherent measures to protect the marine environment."[52] Also, the Mediterranean Offshore Protocol calls for the adoption of international rules, standards and recommended practices and procedures.[53] It is envisaged that the Parties will cooperate either directly or through UNEP or other competent international organizations to establish appropriate scientific criteria for formulation and elaboration and then formulate and elaborate international rules, standards and

[51] See Birnie, P., Boyle, A. and Redgwell, C., op. cit., pp. 500-503 for analysis of the Nuclear Safety Convention and its challenges
[52] Preamble to 1992 OSPAR Convention. Though the provision is not specifically in relation to offshore oil and gas activities.
[53] Offshore Protocol, Art.23, Barcelona Convention, Art.17

recommended practices and procedures.[54] They are expected to harmonize their laws and regulations with these international rules, standards and recommended practices and procedures once they are in place.[55]

While there seems to be a realisation of the need for global action to combat marine pollution some countries will always demonstrate lack of will to support a global initiative.

In the wake of the Macondo accident, the EU also called for globalized efforts to implement uniform control technology in offshore oil exploration.[56] The European Commission specifically urged the European Union to join forces with the United States, Norway, Russia, and OPEC members to set safety benchmarks[57] that implement strict rules on safety and accident prevention in all jurisdictions with offshore oil exploration activities, as well as ensure coordinated individual national efforts in accordance with UNCLOS provisions to implement safety standards beyond a nation's jurisdiction.[58] This is probably one of the most important recommendations of the Commission in response to the Deepwater Horizon[59] which reflects the desired approach if major offshore accidents are to be prevented. The EU Commission's communication noted:

> "Oil and gas exploration or production also takes place in the close vicinity of the EU, off the coasts of Algeria, Croatia, Egypt, Israel, Libya, Tunisia, Turkey and Ukraine…The EU needs to pay close attention to offshore areas adjacent to its territory

[54] Offshore Protocol, Article 23(1)
[55] Id, Art.23(2)
[56] See generally, *Facing the Challenge of the Safety of Offshore Oil and Gas Activities*, SEC (2010) 1193 final Dec. 10, 2010 p.13
[57] Id., p.13
[58] Id.
[59] See Bush, Brittan J., supra note 4, p.555

where offshore drilling is growing and where an accident with any consequent oil spill could damage the environment and economies of several coastal Member States."[60]

Similar views are shared by industry groups who believe that, in the circumstance of offshore petroleum operations, it is sensible to seek international agreement on oil pollution damage from offshore installations with priority on prevention.[61] This to a large extent is possible if countries think a little more about general global interest and not concerned solely about their national economic interests.

In Article 33(3) of the EU Directive on Safety of Offshore Operations the European Commission made commitment to promote high safety standards for offshore oil and gas E&P at international level in relevant global and regional fora. It also urged European IOCs engaged in offshore operations to maintain the same safe operational standards both within and outside EU waters. Though, the provisions in the Directive were not firm and mandatory.[62]

The EU Council also made it clear that one of the objectives of the environment policy of the Union is promoting measures at international level to deal with regional environmental

[60] European Commission's Communication "Facing the challenge of the safety of offshore oil and gas activities", Com(2010) 560 final, published 12 October 2010

[61] See 'Public Consultation: Improving Offshore Safety in Europe', Joint response by Lloyd's, the Association of British Insurers and the International Underwriting Association, pp.2-3 available on line at http://www.lloyds.com/~/media/Files/The%20Market/Operating%20at%20Lloyds/Regulation/GPA/EC_offshore_liability_consultation_response_final1.pdf last visited 19 October 2014

[62] Para.36 of preamble underlines the need for operators to take responsibility for risk management in all operations of the corporation both within and outside the European Union. In para 41 of same preamble, it states that "Members States are not able to enforce rules outside the Union" but could request operators to report safety concerns that occurs in operations outside their territories. Furthermore, Article 20 provides that "Member States shall require companies registered in their territory and conducting, themselves or through subsidiaries, offshore oil and gas operations outside the Union as licence holders or operators to report to them, on request, the circumstances of any major accident in which they have been involved"

problems.[63] To meet that objective the EU countries should consider initiating processes in global institutions such as UNEP and IMO or through the UN to put in place global legal regime on offshore operations. A global legal framework would improve safety of offshore petroleum operations and contribute to the prevention and control of marine pollution and ultimately safeguard marine biodiversity.

Presently, offshore petroleum operations are being carried out in various maritime regions including developing countries and regions such as Nigeria, Ghana, Algeria, Libya, Angola, Congo, Egypt and Equatorial Guinea. These are countries with weak institutions and regulatory regimes and administrative and judicial systems that need serious improvement. Global conventions would help them considerably, especially when such treaties provide for capacity development and technical assistance.

7.5 Achieving Global Regulation of Offshore Operations

Admittedly, having an international regulation through two instruments with global coverage is desirable in addressing accidental pollution from offshore petroleum operations. With that option arises the issue of how to go about achieving such a global convention. This thesis will next explore possible options open to the international community at the global level of regulation. Realistically, there are few options which include IMO, UNEP and UN.

[63] Para.12, COUNCIL DECISION of 17 December 2012 on the accession of the European Union to the Protocol for the Protection of the Mediterranean Sea against pollution resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil (2013/5/EU)

7.5.1 Global Regulation under the Auspices of the IMO

The regulation of offshore oil and gas operations by the IMO has been suggested[64] and some proposals regarding such global regulation have been made at various times. However, these were more in respect of regulation of rigs used in offshore oil and gas operation as opposed to actual activities of offshore E&P. For instance, CMI international working group adopted principles for the development of a draft convention on offshore units. The principles as contained in the 1996 CMI Yearbook are that the regime should, inter alia, be compatible with UNCLOS. The expansion of offshore activities into areas with no adequate regional regimes emphasizes the need for general rules of uniform application. Recognizing the rapid commercial and technological evolution of the international offshore industry, an international offshore regime should be flexible enough to accommodate future commercial and technological developments. Rather than set out detailed prescriptive rules it should focus on the objectives and standards.[65] The Canadian Maritime Law Association (CMLA) supported the possible adoption of a comprehensive international convention on offshore units.[66]

The IMO is a specialised agency of the UN. Offshore operations must fall within the competence of the IMO for it to be regulated by the organisation. More specifically, the issue of classification of offshore installations engaged in offshore operations, whether they are ships carrying out maritime activity is relevant to IMO's regulation of such activities. For instance, floating offshore storage units often converted from oil tankers or purpose built vessels and modern-day jack-up rigs, which are similar to floating barges fitted with long support legs may

[64] Rares, Steven, supra note 3, p.16
[65] This is a suggestion of safety net and self-regulation by operators. See Comite Maritime International, "The Origins of the CMLA Draft Convention on Offshore Units, Artificial Islands and Related Structures Used in the Exploration for and Exploitation of Petroleum and Seabed Mineral Resources" CMI News Letter, No.1 January/April 2004, p.3
[66] Id, p.2

be classified as vessels. It is suggested by some that these floating units and their off-shore activities appear to be proper subjects for the IMO to provide global regulation for their safe construction and operation as well as the consequences of pollution from these installations.[67] Such regulation under the auspices of the IMO was viewed both practicable and sensible.[68] The frustration for such advocates is that the IMO is currently not taking the initiative seriously.[69] This is compounded by the uncertainty in the classification of offshore installations in terms of whether they are ships under applicable international law.

The category of "Offshore installations" is broader than rigs. They include platforms and other production and storage facilities temporarily or permanently affixed to the ocean floor. In any event, while in transit and self-propelled like a vessel they do not engage in exploration and production activities. MODUs might be within the ambit of MARPOL 73/78 while in transit and in relation to operational pollution. Some international instruments, such as the 2013 EU Offshore Directive, accept the classification of MODU as ship when in transit.[70] It is still not settled that rigs stationed and engaged in drilling activity be considered as vessels for the purpose of determining applicable legal regime in the event of an accident.[71] This study is not focused on the issue of classification of MODU: whether a MODU is a vessel/ship or not but deals with offshore installations for the consideration of accidental pollution from offshore petroleum operations.

The mandate of the IMO, as summarized in Article 1(a) of the IMO Convention, are "to provide machinery for cooperation among Governments in the field of governmental regulation and

[67] Rares, Steven, supra note 3, p.16
[68] Id.
[69] Id.
[70] Para.32 of the Preamble to EU 2013 Directive on Offshore Safety.
[71] For a detailed consideration of the legal status of offshore oil rigs see Esmaeili, Hossein, op. cit., p.116 (1997); Kashubsky, Mikhail, (Thesis) op. cit.

practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships…"[72] It seems that as far as the definition of offshore installations as ships is not clearly established, the IMO is not formally required to deal with their activities.

The issue of offshore petroleum operations and their safety is not exactly "shipping engaged in international trade," neither does it directly concern "maritime safety" and efficiency of navigation. Abandoned installations which are no longer in use may constitute hazard to navigation and thus become a concern for the IMO. Expectedly, the IMO is reluctant to deal with offshore activities that do not relate directly to navigational issues. However, it addressed the question of decommissioning of offshore platforms and installations by adopting in 1989 Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the EEZ.[73]

Its mandate of "general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships" does not include offshore installations. Furthermore, unless it is accepted that offshore installations (platforms, rigs, production and storage facilities) can be defined as a "ship", the IMO might not be required to take on the regulation of offshore petroleum operations.
Presently, the IMO despite a few proposals to regulate offshore petroleum operations has avoided undertaking this task. It seems that an instrument through the IMO Legal Committee is presently not feasible. However, global instrument to address safety of offshore operations

[72] Convention on the International Maritime Organisation 289 UNTS 48 (1948), Art.1(a)
[73] According to Shunmugam Jayakumar this appears to be the "generally accepted international rules and standards" referred to in Article 60 of UNCLOS, see Jayakumar, Shunmugam, supra note 2, p.9

and liability issues respectively is desirable and possible with the right political will. It remains to be seen which international organisation would undertake this task. International institutions may have implied competence, for example, IMO may take on certain issues related to prevention and control of marine pollution in the absence of other competent organisation.

7.5.2 The United Nations Environment Programme (UNEP)

The UNEP being a special body of the UN on environmental matters has a mandate "to be the leading global environmental authority that sets the global agenda, that promotes the coherent implementation of the environmental dimensions of sustainable development within the United Nations system and that serves as an authoritative advocate for the global environment."[74] Since its creation in 1972 UNEP has been involved in developing binding conventions and non-binding environmental guidelines and principles. UNEP functions as a secretariat to a number of multilateral agreements and can serve as a platform for drafting rules on various environmental matters, including pollution from offshore operations and their safety.[75]

The regulation of accidental pollution from offshore petroleum operations would dwell much on technical standards of operations and the conditions that a prospective operator should fulfil before a grant of licence for offshore E&P. Some have suggested a joint initiative between UNEP as a special body on environment and the IMO to formulate global regimes on offshore operations.[76] The needed collaboration might be a major uphill task as both organisations show no enthusiasm in filling this regulatory gap.

[74] UNEP website available at http://www.unep.org/About/ last visited 18 June 2014
[75] See UNEP Environmental Law Guidelines and Principles 'Offshore Mining and Drilling'
[76] Stefankova, Iveta, 'International Regulation v National Regulation on Offshore Oil Exploitation – The USA as an Example' ELSA Malta Law Review, Edition III 126, 138 (2013) available on line at http://www.elsamaltalawreview.com/sites/elsamaltalawreview.com/files/imce_uploads/10b.pdf accessed on 30 April 2014

7.5.3 The United Nations General Assembly

The United Nations could suggest convening an intergovernmental conference on offshore oil and gas exploration and exploitation with a view to developing two instruments. First instrument on safety of offshore operations and a second on liability and compensation. Similar initiative resulted in the adoption of the 1995 Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks under the auspices of the United Nations.[77]

Countries such as Indonesia have expressed concern about the absence of global regime on offshore oil and gas operation and suggested need for a regime. Perhaps, an agreement could possibly be reached. Especially, with the present political will among developed countries urging global effort, following the Macondo accident. Though these operations occur mostly within the continental shelf of a coastal state, the gradual increase in the activities and the absence of minimum operating standards pose a much greater risk of accidents than ever.

7.6 International Regulation and National Imperative

A global instrument should emphasise safety case approach to place the onus on operators and industry to reduce to minimum the risk of major accidents and consequential pollution. With international global regulation in place, various governments would be obligated to acquire requisite regulatory knowledge and build capacity to regulate petroleum activities. In recognition of the difference in capacity between developed and developing countries/regions,

[77]In the 1990 following conflict between coastal States and distant-water fishing States over straddling and highly migratory fish stocks in the areas adjacent to the 200 nautical-mile exclusive economic zones an intergovernmental conference under United Nations auspices was convened with a view to resolving the conflict. This Conference adopted the 1995 Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks which introduces a number of innovative measures, particularly in the area of environmental and resource protection obliging States to adopt a precautionary approach to fisheries exploitation and giving expanded powers to port States to enforce proper management of fisheries resources. See UN, available at http://www.un.org/depts/los/convention_agreements/convention_historical_perspective.htm last visited 06 May 2014

the first could be obligated to provide assistance to developing countries in building their capacity. This is very important in achieving the much desired global standards of operations regardless of their location. Essentially, a global regulation would ensure that all operators apply same standard of safety at all times but the regulations would be subjected to abuse where the regulator lacks capacity to monitor operations and enforce standards.

From the foregoing, a global instrument could be negotiated to set the template for more regional sea conventions and protocols. This will ultimately reflect in municipal laws of coastal States which exercise control over offshore petroleum operations.[78] Moreover, the judicial process which could be used by victims of accidental pollution to seek redress is subject to municipal authority. The procedural rules, access to justice, general enforcement of civil claims are mainly national laws. Therefore, the adequacy of municipal law is as important as the global regulation. Considering the economic power that IOCs command globally, political weight of the government is also essential. In the Deepwater Horizon accident President Barak Obama's involvement made BP not only comply with legal requirements relating to liability but also waive their right to limitation of liability. In contrast, Shell, the operator of the Bonga oil field offshore Nigeria refused to pay a USD$3.6billion fine imposed on her for pollution caused by the 2011 Bonga oil spill.[79]

[78] By Art. 77 of UNCLOS coastal States have sovereign rights over their continental shelf, independent of occupation, for the purposes of exploring and exploiting their natural resources. These natural resources include mineral and other non-living resources of the sea-bed and subsoil

[79] The Guardian Newspaper, Bonga Oil Spill: NOSDRA Orders Shell to Pay $3.6bn to Affected Communities, 26 August 2015, available at http://www.ngrguardiannews.com/2015/08/bonga-oil-spill-nosdra-orders-shell-to-pay-3-6bn-to-affected-communities/ last visited 27 August 2015

7.7 Achieving a Robust International Legal Regime for Accidental Pollution from Offshore Petroleum Operations

Offshore petroleum operation touches on the issue of energy security and economic prosperity of oil-producing nations, as well as regional and national environmental concerns. Coastal States exercise control of such activities. However, without taking away the direct control of the exploration and exploitation of these resources, it may be possible to regulate the international players engaged in offshore petroleum E&P in order to achieve the goal of prevention of accidental pollution. Global regulation of IOCs is particularly important because they could apply 'double standards'[80]in their operations in different countries.[81] Such actions are usually to the detriment of the environment and people in countries with weak institutional and legal safeguards coupled with the lack of political will to confront powerful multinational corporate interests like IOCs.[82] The impact of powerful commercial interests on environmental regulations cannot be over emphasised as developed countries also have their experiences. The

[80] Double standards involves, inter alia, use of different safety wears and equipment in different regions or countries; non application of best available technology and best environmental practice in all operations of the company in various locations; different treatment of staff based on the country of operations; and disparity in levels of concern for the environment

[81] In response to abuse of human rights by businesses in parts of the world the UN in 2011 Human Rights Council endorsed the UN Guiding Principles on Business and Human Rights: Implementing the United Nations "protect respect and remedy" Framework. It is a soft law instrument and Principle 23 is very instructive. It provides: "In all contexts, business enterprises should: (a) Comply with all applicable laws and respect internationally recognized human rights, wherever they operate; (b) Seek ways to honour the principles of internationally recognized human rights when faced with conflicting requirements; (c) Treat the risk of causing or contributing to gross human rights abuses as a legal compliance issue wherever they operate." Available on line at http://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf last visited 30 January 2015

[82] Double standards could be found in the operations of IOCs in Africa. For an insight of the Angolan situation please see Silva, Ricardo, 'Environmental Compliance in the Angolan Offshore Industry', Available on line at http://www.mirandalawfirm.com/uploadedfiles/38/35/0003538.pdf last visited on 23 May 2014 Application of different operational and safety standards in different regions has been observed not only in Africa but also in other less integrated and less developed regions like South America, see Henningham, Stephen, *The Pacific Island States - Security and Sovereignty in the Post-Cold War World* 76 (1995); see also Ciaran O'Faircheallaigh, 'The Local Politics of Resource Development in the South Pacific: Towards a General Framework of Analysis' in Stephen Henningham, R May and Lulu Turner, *Resources, Development and Politics in the Pacific* 258 (1992); See also Brown, Chester, supra note 5, p.136 ; Richardson, Ben, 'A Study of the Response of Transnational Environmental Law and Policy to the Environmental Problems of East Asia and the South Pacific' 7 *Environmental and Planning Law Journal* 209, 216 (1990) suggesting necessity for regional cooperation to protect the environments in dependent Pacific island territories "which lack the resources to administer detailed environmental regulations and enforce them on transnational mining companies"

National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling noted on impediments to safety regulations that:

> "The root problem has instead been that political leaders within both the Executive Branch and Congress have failed to ensure that agency regulators have had the resources necessary to exercise that authority, including personnel and technical expertise, and, no less important, *the political autonomy needed to overcome the powerful commercial interests that have opposed more stringent safety regulation.*"[83]

An effective regulation of offshore operations would require a robust set of international regulations at the global and regional levels with a responsive regulatory system at the municipal level to implement and enforce compliance with international standards.

7.7.1 Focus of a Global Regime

It was suggested earlier that the global regime should consist of two instruments: A framework convention on safety of offshore petroleum operations and a treaty on liability and compensation.

7.7.1.1 Framework convention on safety of offshore petroleum operations

A framework convention on safety of offshore petroleum operations may be tailored along the lines of the binding obligations adopted in the 1994 Convention for Nuclear Safety for several reasons.[84] First, both nuclear and petroleum E&P are potentially hazardous activities, they may

[83] See Deepwater Horizon Report to the President, op cit., p. 67 (Emphasis mine)
[84] It is important to note that the Nuclear Safety Convention has serious challenges in its implementation and enforcement and may not be adjudged as a very successful regime. It is only used as a reference point for its creation or adoption of binding obligations in a treaty on hazardous activity that is conducted within State

cause severe impact on the environment in the event of a major hazard. Second, the objectives of a global treaty on offshore safety would be similar to those of the Convention on Nuclear Safety. That is, to achieve and maintain a high level of safety of offshore petroleum operations worldwide through the enhancement of national measures and international co-operation including safety-related technical co-operation. Two, to ensure the establishment of effective safety management systems for all offshore installation and three, to prevent accidents with severe environmental consequences and create mechanism to respond and minimise such consequences should they occur.[85]

Third, the Convention on Nuclear Safety is not too detailed. It is a framework instrument setting out relevant obligations aimed at ensuring that States do their best to prevent nuclear accident. For instance, it mandates parties to take "within the framework of its national law, the legislative, regulatory and administrative measures and other steps necessary for implementing its obligations under this Convention."[86] States are to establish and maintain legislative and regulatory framework to govern safety of nuclear installations; ensure application of national safety requirements and regulations and a system of licensing.[87]

Parties are required to have national authorities with sufficient competence and financial and human resources, responsible for implementation of the legislative and regulatory framework.[88] Similar to the experience learnt by the US from the Macondo accident, the Convention on Nuclear Safety requires that a regulatory body should be separate from any

territory. A successful negotiation and adoption of binding obligations in a global treaty on safety and prevention of accidental pollution, even if not completely perfect, would be a good start in the regulation of offshore oil and gas operations. See Birnie, P. et al, op. cit., pp. 500-503 for detailed critique of the Convention on Nuclear Safety

[85] See Nuclear Safety Convention, Art. 1 for similar objective.

[86] Id., Art.4

[87] Id., Art.7

[88] Art.8(1)

other body concerned with promotion or utilization of nuclear energy.[89] Also, to encourage self-regulation, prime responsibility for the safety of a nuclear installation shall be placed on the holder of the relevant licence.[90]

Other notable areas addressed by the Convention on Nuclear Safety are emergency preparedness entailing on-site and off-site emergency plans,[91] siting of installations,[92] safety in design and construction.[93] Design must also take into consideration human factors and man-machine interface.[94] Parties are to ensure all safety measures are available and in place throughout the lifetime of the nuclear installation.[95]

In addition to having similar obligations as the Convention on Nuclear Safety above, a global treaty on safety of offshore petroleum operations should go a step further. For example, there should be obligation on capacity building, training and technology transfer to developing regions to adequately respond to major hazards. Beyond the other preventive environmental principles, the treaty should incorporate the principle of common but differentiated responsibility in some of the obligations that will be imposed on States. For instance, in terms of research and development, the US and States in advanced regions such as Western Europe

[89] Art.8(2), The Deepwater Horizon report observed that the Minerals Management Service (MMS) had conflicting missions and focused more on collecting money for the U.S. Treasury than on enforcing environmental and safety regulations. Almost immediately following the Deepwater Horizon incident, the U.S. government renamed MMS to Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). Shortly thereafter, it divided BOEMRE into three independent entities within the Department of Interior: 1) the Bureau of Ocean Energy Management (BOEM) promotes development of offshore energy sources, including oil and gas; 2) the Bureau of Safety and Environmental Enforcement (BSEE) is responsible for ensuring comprehensive oversight, safety, and environmental protection in all offshore energy activities; and 3) the Office of Natural Resources Revenue is responsible for royalty collections, auditing and related tasks. The reorganization did not happen by statute, but internally through a "reorganization order" issued by the U.S. Secretary of the Interior. (See Secretary of the Interior Order No. 3299 (available at http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=32475)
[90] Art.9
[91] Art.16
[92] Art.17
[93] Art.18
[94] Art.18(iii)
[95] Arts.11, 12, 13 & 19

should take the lead. Also, regulatory institutions in the US and countries operating in the North Seas should endeavour to assist developing countries develop their regulatory capacity. Such capacity is necessary for proper monitoring and implementation of a global treaty. The idea of mandating developed countries to render support to developing countries has been expressed by Russia, although, it mainly advocated for transfer of technology to developing nations that could be affected by offshore oil spills.[96]

7.7.1.2 Offshore Liability Treaty

A global instrument may be required to address the issue of liability with particular emphasis on transboundary pollution. Such liability should be strict with reasonably high liability cap and channelled to operators of offshore operations. Furthermore, victims should be conferred with locus to bring action against parent companies for actions of subsidiaries that result in major hazard where damages would be beyond the capacity of a subsidiary.

Strict liability that does not require proof of fault or negligence is said to be more effective in protecting the environment, as fault (or negligence) is difficult to prove in environmental damage cases.[97] A right of access to justice to be guaranteed by all nations in the event of a disaster with transboundary impact would ensure that the polluter is held accountable and pays for the negative consequences of his economic venture.

Another value of liability provision is the element of deterrence. Such strict liability for environmental damage caused by accidental pollution will be an incentive for operators to

[96] The Embassy of the Russian Federation in Canada Press Release, supra note 3
[97] Beder, Sharon, op. cit., p. 41

undertake actions to improve safety and reduce the risk of their actions.[98] In essence, it can be used as an effective preventive tool against major hazard.

The degree to which the BP compensation fund for settlement of claims for the Deepwater Horizon exceeds the present liability caps of IOPC and OPOL places doubts on the feasibility of liability caps for oil pollution from tankers and fixed platforms.[99] Economists are of the view that when liability is limited, violators are not provided with an "appropriate (economic) incentive for prevention" of environmental disasters like the Deepwater Horizon.[100] They advocate for the removal of limitation of liability provisions to meet all possible claims in any incident so victims do not bear the difference.[101] Also, requirement for compulsory insurance should be retained. But the fear has always been that where liability is unlimited it will be difficult to secure insurance for such operations. This may affect offshore petroleum development as some competent independent companies may be driven out of the market.[102]

Some expressed opinion that unlimited liability will not strike a balance that recognises the necessity for enterprises to seek and find petroleum which is much needed globally. They argue that there should be a commercially realistic amount that rig owners should be made to pay.[103] Limitation of liability in maritime law is calculated using the tonnage of the ship/vessel,[104] in which case the possible amount of oil it could spill can be estimated. The case of a drilling rig

[98] Segerson, Kathleen, 'An Assessment of Legal Liability as a Market-Based Instrument' in *Moving to Markets in Environmental Regulations: Lessons from Twenty Years of Experience* Freeman, Jody and Kolstad, Charles D. (eds) (Oxford University Press) 250, 251 (2007)
[99] Smith, Marissa, supra note 20, p.1497
[100] Faure, Michael & Hui, Wang, 'The International Regimes for the Compensation of Oil-Pollution Damage: Are They Effective?'12 Rev. Euro. Community & Int'l Envi. L. 242, 249 (2003).
[101] Id.,
[102] Deepwater Horizon Commission Report to the President pp.283-284
[103] Rares, Steven, supra note 3, p. 21
[104] See 1992 CLC, Art. V; 1976 LLMC, Art.6 provides for limitation with reference to the tonnage of the vessel while Art.7 on passenger claims is based on the number of passengers the ship is authorised to carry.

is completely different[105] but it is still possible to place a cap on liability for accidental pollution from offshore petroleum operations.

The amount of oil that could flow from the well in one incident cannot be easily determined. If liability limitation is to be calculated based on the volume of oil in the reservoir the limitation amount may be very high. This too may make it difficult or impossible for small operators to get insured for offshore operations. The liability cap established in the Deepwater Horizon case is an indication that there are operators that can bear the cost of an unlimited liability in the event of a similar major accident. However, in placing cap on liability there must be a balance to avoid situations where increased amount of protective regulations bring about unexpected consequences that work against the regulatory goal.[106]

7.7.2 Regional Agreements on Offshore Petroleum Operations

Regional instruments should be adopted to, inter alia, do the following:

1. Adopt the standards and requirements in global treaties but with variations in details to take into consideration the specific geographical conditions and needs of the region. Such variations must not be less stringent and less effective than the global standards. Regional instruments that have very high standards of safety and good provisions on protection of the marine environment against pollution from offshore petroleum E&P and other activities might be confronted with a global treaty that provides for less stringent regulations. States in such regions should be able to maintain the higher standards of the regional agreement without

[105] White, Michael, op cit., p.25
[106] Bardach, Eugene and Kagan, Robert A., op. cit.

conflict as the global treaty would usually provide for such circumstances, by encouraging more stringent rules in regional agreements and national laws.

2. Provide for regional cooperation, especially in the area of emergency preparedness and response.

3. Address liability issues in transboundary context and guaranteed access to justice. Especially, grant individuals legal standing to bring claims against IOC at regional courts if the coastal State lacks the political will to effectively enforce global and regional regulations.

For regional regulations to provide the relevant international impact that will result in adequate global offshore petroleum safety there should be regional agreements in all regions with offshore petroleum activities.[107] While the above highlights some pertinent issues to be addressed, the Mediterranean Offshore and Kuwait Protocols contain robust provisions that can serve as a model for other regional treaties.

7.7.3 National legal framework on safety of offshore operations

A national legal regime in an international context is essential for several reasons.

1. International law can hardly be effective without the adoption by States backed by national laws. It is the national legal regime that determines the success of such international regulation of a purely economic activity conducted within territories of sovereign States. Therefore, the municipal institutions must be strengthened and the authority/regulator

[107] Following the Macondo incident and the prospect of offshore oil and gas operations by their Gulf of Mexico neighbour, Cuba and Mexico, the US government has been advised to negotiate with them. See the Deepwater Horizon Commission Report to the President, p. 300 where the Commission made it clear that "it is in our country's national interest to negotiate now with these near neighbors to agree on a common, rigorous set of standards, a system for regulatory oversight, and the same operator adherence to the effective safety culture called for in this report, along with protocols to cooperate on containment and response strategies and preparedness in case of a spill."

adequately staffed with trained personnel and financed to acquire requisite capacity to regulate offshore operations. The State authority/regulator would be responsible for the enforcement of safety standards set by international treaties and domestic regulations. Therefore, technical expertise and capacity of the authority/regulator are very fundamental to the effective regulation of offshore petroleum operations and ensuring the highest level of standards necessary to prevent major accidents.[108]

2. Licensing of offshore operations remains the prerogative of coastal States that may grant operating licences to any company. States would be required and expected to demand and enforce fulfilment of minimum requirements adopted in global and regional instruments. Such requirements must be met in order to undertake offshore operations, especially in deep water areas of the continental shelf.

3. The national regime must provide framework for easy access to justice for victims of transboundary impact of accidental pollution from offshore installation within their jurisdiction to enable them exercise their rights under global and regional treaties.[109] For instance, victims should be able to enforce through civil liability claims their rights to compensation for loss of income, injury and damage to property.

4. States should in their domestic legislations allow for easy movement of rescue personnel and equipment in the event of accident requiring multinational effort to contain the pollution.

International cooperation and a global instrument are essential for the protection of marine environment and its biodiversity as a common concern of all nations. Like most UNCLOS

[108] Deepwater Horizon Commission Report to the President, pp. 67 & 126-127

[109] This obligation is already imposed and expected of them by virtue of Art.235 of UNCLOS. Perhaps it is time to demand enforcement of each and every obligation relating to protection of the marine environment under the UNCLOS. Perhaps, the absence of an enforcement mechanism within the convention for its continuous development as a framework convention has rendered some provisions unproductive in addressing the very problems or issues they were meant to address.

provisions, such a global instrument should make provision for and encourage regions and coastal States to enact much more stringent regulations where need be in line with the peculiarities of that region or State. While developed countries may not have difficulties with law enforcement, developing countries with weak institutions may find it challenging to enforce such standards.

A global regulation should apply the principle of common but differentiated responsibility to accommodate countries that might need help in resolving her regulatory challenges.[110] For instance, performance-based approach imposes challenges on the regulator, particularly at the transition phase. Field inspectors must possess or learn management and systems-design skills of sophistication equal to those of their industry counterparts who create the systems, the adequacy of which the inspectors are required to assess and audit.[111] In such circumstances, developed countries would be required to give needed training and technical assistance to developing countries.

7.8 Enforcement of a Global Treaty

The proposed convention may have treaty enforcement challenges in the absence of a workable mechanism and an international organisation responsible for offshore petroleum activities to monitor implementation of the treaty obligations. Nevertheless, the effect of naming and shaming for non-compliance with treaty obligations could propel State action. Also, with a binding treaty in place, UNEP and the IMO that have mandates relating to environment and maritime safety respectively could play more active roles in the prevention of accidental

[110] Similar view was expressed by President Dmitry Medvedev who expressed the need for technology transfer to developing countries that could be impacted with oil spill from offshore operations, see The Embassy of the Russian Federation in Canada Press Release, supra note 3
[111] Rob Grant, Q.C., Will Moreira, Q.C. and David Henley, op. cit., p. 32

pollution from offshore petroleum operations, especially when one of them or the United Nations is designated as the secretariat for the treaty.

At the national level safety standards and other operational requirements of the treaty are to be enforced by the regulator. States must demand adherence to international standards from operators and hold them accountable for any breach. In the event of accidental pollution which causes damage to the marine environment, property and businesses, every affected person would be able to bring civil liability action against the operator. Where the regulator fails to implement and enforce the treaty provisions, there would be legal basis for private individuals including civil society to demand that the regulator discharges its duty. Moreover, the treaty may specifically provide for the institution of legal proceedings by private persons and groups in the event of failure of the regulator to act.

Moreover, the mere existence of binding treaty obligations and standards would propel IOCs to conduct their activities in any region of the world in line with international standards, irrespective of its domestication or otherwise as they would be shamed for any action to the contrary. Also, IOCs may feel responsible for the actions of their subsidiaries in any part of the world and ensure their actions do not fall short of the treaty standards to avoid naming and shaming. This would ultimately help global protection of the marine environment.

7.9 General Conclusion

Offshore petroleum operations are dangerous, the operating environment is challenging and the risk of accidents is ever present. While industry players are conscious of the dangers of their activities and are involved in setting standards for best practices for operations, the responsibility still rests on governments to provide effective regulations.

Offshore operations have experienced major hazards in various regions of the world and caused considerable damage to the marine environment and businesses dependent on it, as well as loss of human lives and biodiversity. As operations progress further to deep and ultra-deep waters the safety of these operations has become a global concern. Issues of prevention of major hazards, preparedness and response to pollution and liability and compensation are major responsibility of governments as well as the industry.

Offshore petroleum activities are conducted within coastal States maritime jurisdiction, and their authorisation, monitoring and law enforcement are primarily the responsibility of national governments. The petroleum industry have assumed global status both in terms of the work force and their relevance to energy supply. There are also international rules and regulations at both regional and global levels concerning offshore petroleum operations. Despite the levels of regulations available to the industry, offshore petroleum operations have witnessed catastrophic incidents that call to question the adequacy of the legal regime or regulatory system in place.

This thesis focused on accidental pollution from offshore petroleum operations to the exclusion of operational pollution. The legal analysis was mainly concerned with international regulations on offshore accidental pollution at global and regional levels. The three sea regions of North-East Atlantic, the Mediterranean Sea and the Baltic Sea together with the EU Directive on Safety of Offshore Operations that cover a good part of these regions were the focus of analysis for regional regulation of accidental pollution from offshore petroleum operations. This was simultaneously done with the examination of the global normative framework.

After the Deepwater Horizon and Montara accidents the safety of offshore petroleum operations, emergency preparedness and response and liability and compensation, especially in the case of transboundary pollution became issues of concern for both regulators and industry operators. Hence, the main question considered was whether the extant international legal regime adequately provides for prevention of accidental pollution, response to emergencies and liability and compensation arising from offshore petroleum exploration and exploitation activities? If not, what form of international legal framework might be deployed to remedy this gap in the legal regime on offshore petroleum exploration and production?

The study proceeded on the assumption that international law seems not to adequately address issues of accidental pollution from offshore petroleum exploration and exploitation. Therefore, there is a need to put in place an international framework that will substantially and effectively address these challenges of offshore operations.

The thesis examined relevant international legal instruments to determine the extent to which they provide for safety and prevention of accidental pollution, emergency preparedness and response mechanism and liability and compensation, especially in the case of transboundary pollution. In examining the above questions, the thesis used the principles of prevention, precautionary and polluter pays as tools for the theoretical examination and analysis of offshore legal regimes of the three selected regions and the extant global legal framework on offshore petroleum operations.

The research shows that at the international level UNCLOS and the OPRC are the only instruments which form the global legal framework on offshore oil and gas operations. Of the three regions under examination, it is only the Mediterranean Sea region that has protocol governing offshore oil and gas operations in regional waters. There are non-binding

international instruments such as Stockholm and Rio Declarations and guidelines and standards made by the World Bank group, UNEP and private institutions that influence the conduct of operators and government regulation of offshore activities.

UNCLOS imposed obligation on States to prevent pollution without providing specific provisions as operational requirements for offshore operation needed to make the operations safe and prevent accidents. All three regional regimes imposed obligation on member States to prevent pollution of the marine environment. Because they were not adopted specifically for the purpose of preventing accidental pollution from offshore petroleum operations, they lack the requisite content that can guarantee safety, especially in deep water and ultra-deep water operations. States rely on municipal regulations and some industry standards which do not encourage uniformity in the approach to safety and prevention of accidental pollution in those regions. However, the EU Directive on safety of offshore operations contains comprehensive provisions on major hazard prevention. As such there is the possibility of achieving some level of uniformity of preventive measures among States in the regions covered by the Directive.

In respect of emergency response at a global level UNCLOS provides no detailed provision on the subject. The OPRC addresses emergency response but seems inadequate in providing the requisite alertness and swift response needed to contain a catastrophic incident in the magnitude of the Deepwater Horizon. The legal regimes at regional levels seem more comprehensive in their approach to emergency preparedness and response. For instance, OSPAR urged parties to continuously review their emergency frameworks. A needed or required improvement, in a post-Macondo era, was provided by the EU Directive on safety of offshore operations.

It is argued that a global approach to emergency preparedness and response is needed as all countries should be involved in combating offshore accidental pollution. This work argues that while improvement is needed in the global regime it does not necessarily have to be a new

treaty. That an amendment to the OPRC through the IMO or Conference of the parties as provided in Article 14 of the Convention may improve emergency preparedness and response at the global level. Based on lessons learnt from recent incidents, such an amendment should be founded on research on the state-of-the-art of oil pollution preparedness and response as demanded by Article 8 of OPRC and take into cognisance current technology in the offshore petroleum industry. Also, emergency response may be improved through regional regimes that would be tailored to the circumstances of each region. The EU Offshore Directive may provide useful guide to such regional approach.

The research shows absence of binding global treaty on liability and compensation. Though UNCLOS imposes responsibility on States to protect and preserve the marine environments it did not provide details on their liability. For instance, how liable a State will be, the type or level of liability and the basis on which any compensation may be determined are not provided.[112] Generally, it is a State's duty to ensure that there is a process for compensation and that effective liability regime exist in domestic law. But, State responsibility, as in making the State liable for environmental harm resulting from activities within the State does not exist in practice. With the CLC and Fund conventions not applicable to offshore petroleum operations the absence of a global treaty on the subject is clear. States appeared to have ignored their obligation under UNCLOS to cooperate and adopt international rules, standards and regulations on liability in respect of offshore oil and gas operations.

The analysis indicates that regional instruments, especially the Mediterranean Offshore Protocol, made detailed provisions on liability. While the traditional treaties forming the regional regimes did not adequately address liability for pollution from offshore petroleum operations, especially transboundary impacts, the EU Directive on offshore safety has brought

[112] See UNCLOS Arts.194(3) 197, 204, 208 and 235

offshore oil and gas operations under the 2004 Environmental Liability Directive. By implication liability within the EU is channelled to the operator who has right to limit his liability in line with provisions of the 1976 Convention on Limitation of Liability for Maritime Claims and other related conventions as implemented by national laws.[113] But this thesis argues that the determination of liability limitation under LLMC does not really fit for all offshore petroleum installations and operations as the basis for calculation of the limitation amount is uncertain. Considerations would be different if it were a case of fixed liability cap.

In the premise, it was clear that there is no global treaty for the regulation of accidental pollution from offshore petroleum operations. The victims of such accidents in an international context of transboundary pollution are not protected and guaranteed means of settling liabilities and prompt payment of adequate compensation. The thesis therefore argues that accidental pollution from offshore petroleum operations could be prevented and victims of accidental pollution would be better protected in an international legal framework consisting of two global treaties. One on safety, the other on liability and supported by regional agreements taking into consideration special circumstances specific to each region. Such international regime must ensure that all States have competent, effective and functional regulators to implement and enforce compliance with global standards. That an international consensus for a global treaty could be achieved with the application of the principle of common but differentiated responsibility.

7.10 Contribution

This study makes contribution to the existing literature by first making a novel strong case for two global treaties to regulate offshore petroleum operations. Secondly, it makes a strong

[113] Directive 2004/35/CE, Art.4(3)

argument that unlike the shipping industry where international regulations may solely be used to address safety of shipping and maritime claims, independent of the flag State, offshore petroleum E&P activities are different. They need cooperative and effective domestic legal regime backed by capable and credible domestic institutions with highly skilled and motivated personnel to guarantee safety of offshore petroleum operations and prevent accidental pollution. The legal regime must ensure adequate and prompt settlement of liabilities in the event of accidental pollution, even in a transboundary context. Finally, it argues that a robust international legal regime would require all three levels of legislation- global, regional and national- to be effective to be effective in addressing accidental pollution in a growing global industry and ultimately guarantee protection of the marine environment and preserve its biodiversity.

7.11 Directions for Further Research

This study has argued that for there to be safety in offshore petroleum E&P globally and prevent accidental pollution two global treaties are needed. First on safety of offshore petroleum operations and a second on liability and compensation.

While it is suggested that a framework treaty with binding obligations on safety and prevention of major hazard is desirable, detailed modalities for negotiation and detailed substantive content is not provided. This may need further research. In relation to a liability and compensation issue, strict liability and reasonably high liability cap is suggested in this study. However, a further research would be needed to provide best options on limitation of liability and contributors to a possible Compensation Fund.

In view of the difficulties that confronted Indonesia in her bid to secure compensation for Indonesian communities and citizens affected by the Montara spill in offshore Australia, a further research on the possible content of a liability treaty may also consider a robust mechanism for settlement of liability in cases of transboundary pollution arising from offshore petroleum E&P.

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