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**OFFSHORE DRILLING IN OCEAN WATERS AND
ITS ADVERSE EFFECT ON THE POTENTIAL OF
BLUE CARBON STORAGE OF COASTAL STATE:
A BELIZE PERSPECTIVE.**

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Table of Abbreviations

CO ₂	Carbon Dioxide
EEZ	Exclusive Economic Zone
FPS	Floating Production System
GHG	Green House Gas
GESAMP	Group of Expert on the Scientific Aspects of Marine Pollutions
IMO	International Maritime Organization
MARPOL	International Convention Prevention of Pollution from Ships
MODU	Mobile Offshore Drilling Unit
NOAA	National Oceanic and atmospheric Administration
OPRC	Oil Pollution Preparedness Response and Co-operation
REDD+	Reduction emission from Deforestation and Forest Degradation
TLP	Tension Legal Platform
UNLOSC	United Nation Law of the Sea Convention
UNCLOS	United Nation Conference on the Law of the Sea.
UNFCCC	United Nation Framework Convention for Climate Change
UNEP	United Nations Environmental Program

Tables of Cases

Corfu Channel Case, ICJ, Reports (1949) 4 at 22.

Passage Through the Great Belt, ICJ, 1991, (1994) 94 ILR 446.

Nuclear Test Case, ICJ, Reports (1973) 99 at 106.

Table of Conventions

The International Convention for the Prevention of Pollution from Ships (MARPOL).

The International Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter (London Convention).

The International Convention on Oil Pollution Preparedness, Response and Cooperation, (OPRC).

The International Convention for the Protection of the Marine Environment of the North-East Atlantic.

The Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention).

The Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment.

The Convention for the Protection of the Marine Environment of the Baltic Sea Area.

Domestic Legislation

Belize Environmental Protection Act, Chapter 328.

Belize Maritime Act, 1992.

Belize Petroleum Act, Chapter 225.

Introduction

Hunger for energy has created a diverse change from the drilling of oil on land to setting up of platforms above our ocean waters. This is generally problematic to the marine environment and has important practical ramifications on our daily lives. It is yet another example of the interdependence of man and the sea, whose longest relationship is one of the oldest, most exciting and most fruitful on the face of the earth.¹ The effort to harvest the riches of this new environment entered a new phase when people realized what an abundance of minerals were hidden under the water.² By the turn of the century the first commercial offshore oil drilling operation was under way in the Summerland Field in California.³ This has created a significant increase in the level of offshore oil production in the recent years requiring at the same time advance and complicated technology. The modern technology for oil exploration and production is marching forward into the 21st century.⁴ There are now more than 8000 offshore oil platforms and 700 exploration drilling rigs in over 5000 offshore field developments in more than 100 countries.⁵

The aim of this work is to provide an analysis of Offshore Drilling Platforms in Ocean Waters and their Adverse Effect on the Potential of Blue Carbon Storage of Coastal States. Chapter one will be discussing the composition of the coastal State and its benefit to the atmosphere. This Chapter will discuss in detail coastal State blue carbon potential and its uniform fitting of balance of atmospheric pollution. The role of the coastal State in the new era of blue carbon will also be referred to.

Chapter two will be exploring the history and development of the offshore drilling. Focus will also be placed on, the advantage, and the disadvantage. The operation of these offshore platforms and the pollution that may occur in their operation; the transportation of the oil from these platforms in the ocean water's susceptibility to the perils of the sea; the new phenomenon of the decommission of the offshore drilling platform will also be discussed moderately.

¹ Gavouneli M "Pollution From OffShore Installations" Grahman & Trotman Ltd, 1995. p 1

² Ibid

³ Geyer in English (ed): Ocean resources and public policy, Seattle/London 1973 pp. 94-95.

⁴ Gold E. "Gard Handbook on Marine Pollution," Gard (1997) p. 288.

⁵ Fender J.E, "Note, Trouble Over Oiled Waters: Pollution Litigation or Arbitration The Ixtoc I Oil Well Blow-Out." 4 Suffolk Transnat'l L.J 281 at 282.

Chapter three will be discussing the comparative, application of different regulations on prevention of pollution. There are currently some conventions that cover the pollution from offshore drilling platform and therefore an analysis of the recent legislation on offshore pollution and how it will affect offshore drilling will be provided.

Chapter four will be dealing with Belize's perspective on marine pollution. Belize has the largest barrier reef in the northern hemisphere and this chapter will discuss how its flora and fauna will be affected by unsafe offshore drilling. Finally the discussion will lead to the regulation to be enacted in Belize to protect the marine environment.

Chapter five will analyze how pollution can be curbed in ocean water. Recommendations will be given on how offshore platforms can operate at higher and safer standards to create thus less threat of pollution.

Chapter One

Before exploring the concept of blue carbon and why it could be an important paradigm to both developed and developing countries, it needs to be established that there are brown, black, green and blue carbons which are beneficial to the atmosphere.⁶ The focus of this chapter is mainly on blue carbon. Blue Carbon has been defined as ‘algae, mangrove forest, salt marshes, seagrass meadows, coral reefs, and ocean itself which serve as natural sink systems of carbon dioxide (CO₂).’⁷ Blue carbon has a double counter action towards climate change: it mitigates the potential impacts and creates adoption for those who are irreversible, at the same time.⁸

Carbon Dioxide is considered one of the major Green Houses Gases (GHG) that is emitted into the atmosphere. Green House Gases are defined as- ‘gases given off into the atmosphere when fossil fuels and other carbon-based materials are burned.’⁹ When these ecosystems are destroyed the carbon that is stored then releases back into the atmosphere. The growing emission of CO₂ from a wide range of human activities is causing unprecedented changes to the land and sea. Identifying effective, efficient and politically acceptable appreciation. One of the most promising new ideas to reduce atmospheric CO₂ and limit global climate change is to do so by conserving mangroves seagrass and salt marsh grasses. The prevention of marine pollution is essential to our daily lives. ‘Pollution of the marine environment’ means the introduction by man directly or indirectly, of substances or energy into the marine environment, including estuaries, which result or likely to result in such a 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.¹⁰

It has been noted that carbon captured by living organisms in the oceans is stored in the form of sediments from mangroves, salt marshes and sea grasses. This trio is responsible for the

⁶ World Resources Institute, Emissions and Sequestration-The Binding of Carbon (2000).

⁷ Nelleman et al. “Blue Carbon: A Rapid Response Assessment” United Nations Environment Programme.

⁸ Ibid.

⁹ McKenzie C. Et al. “Science, Medicine & Technology in Society” (2004) p. 2.

¹⁰ Article 1 (1) (4) of the LOSC.

55 percent storage of the carbon that is emitted into the atmosphere and it is not for centuries but for millennia.¹¹

Some of the countries with the mitigating potential, such as those in tropical Asia are clearly the most prominent region for mangrove protection. The four countries with the highest biophysical mitigation potential are Indonesia, Malaysia, Papua New Guinea and Vietnam.¹² These countries constitute half of the global potential of their coastal ecosystem for the blue carbon storage. The potential is mostly driven by Indonesia, whose annual mitigation potential is about one-third of the potential blue carbon.¹³ In addition to these countries, one should consider the wider Caribbean that has a potential to contribute to the storage of blue carbon. Belize, is at the forefront of exploring its potential.

Developed countries, in compliance with the *United Nation Framework Convention for Climate Change*,¹⁴ be paying the developing countries for climate related studies and projects, such as credit swap, and assist them financially to manage the ecosystem. This will help countries such as Belize, to benefit from preserving their rich ecosystem. Potentially it will be the small Caribbean country's viability of storing the blue carbon which will ultimately contribute to reduce the carbon dioxide in the atmosphere.

Global warming is also of key concern and concepts were developed to deal with this issue in general since every State would be affected. Global warming is defined as- 'the rising average temperature of Earth's atmosphere and oceans and its projected continuation.'¹⁵ Due to this phenomenon, the international community has adopted the climate change mitigation approach, which is an action to decrease the intensity of radioactive forcing in order to reduce the potential effects of global warming. Dealing with these issues are, the *UNFCCC*, and its subsequent Protocol, the Kyoto Protocol, which was adopted in Kyoto Japan.¹⁶ Under the

¹¹ World Resources Institute , "Emissions and Sequestration- The Binding of Carbon (2000).

¹² Murray, B.C Et al. " Green Payment for Blue Carbon Economic Incentives for Protecting Threatened Coastal Habitats." (2011).

¹³ Ibid.

¹⁴ UNFCCC 1992

¹⁵ Nelleman C. etal. "Blue Carbon: A Rapid Response Assessment." United nation Environment Programme.

¹⁶ Birnie P. Et al. , Basic Documents on international law and the environment, Oxford Clarendon Press 1995 pp. 10-35.

UNFCCC, the precautionary principle was adopted which states, ‘If an action or a policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is harmful, the burden of proof that it is not harmful falls on those actions’.¹⁷ This allows policy makers to make discretionary decisions when there is possibility of harm and the knowledge is lacking. Under the Kyoto Protocol there are in place mechanisms emissions trading, clean development mechanism and joint implementation which can be absorbed the blue carbon market.

The blue carbon market shows the visibility of the mechanisms coming together. This is where developed countries are paying the coastal States to keep their blue carbon stock per hectare due to the high beneficial storing capacity of its ecosystems. Emission trading will allow developed countries to buy credits from countries that are not using their quota and physically pay the coastal State the conserve ecosystem for its continual use as a receptor of the emitted carbon. The money will be used to develop expertise in how to manage these ecosystems and the remainder can be used to build their economy. A recent survey of 2010 in Belize shows that the country has 74,684 hectares of carbon stocks which stretch over three hundred kilometers of coastline ecosystem.¹⁸ This paradigm shift would be instead of destroying the ecosystem for development there could be conservation and technical expertise to manage for the benefit of these coastal States and broader atmospheric cleansing. The conservation would be enhanced as years pass and technical expertise would be gained, which in turn would have further developed the management of these coastal State ecosystems. Presently in Belize it is illegal to cut mangrove; this is legislated in the Belize Environmental Protection Act with a fixed penalty if anyone is caught.¹⁹

The developed countries, thus play an important role in the new era of blue carbon initiatives reducing emission of carbon material in the atmosphere which is the major sources of Green House Gas. Recent reports by scientist signal mangrove destruction and degradation as contributing to 10 percent of the global emissions from the forest sector. Blue carbon is the new hype in the evolving Reduction Emission from Deforestation and Forest Degradation (REDD+)

¹⁷ Rio Janiero Summit 1992.

¹⁸ Danto D. etal. “Mangroves Among the Most Carbon Rich Forests in the Tropic.” *Nature Geoscience*. (2011).

¹⁹ Belize Environmental Protection Act CAP 328 (Belize) S.10 (1)(2).

segment of the carbon market,²⁰ since this initiative is to mitigate the destruction, exploitation and other urban and industrial developments that causes the emissions.

REDD+ and its relationship to blue carbon bears a true commitment to ensure that measures be taken to preserve and manage coastal ecosystems by both reducing and increasing the storage of carbon. It was a step designed to use incentives in order to reduce the emission of greenhouse gasses from deforestation and forest degradation.

Deforestation is defined as, ‘removing forest from the land leaving it exposed.’ While on the other hand degradation is defined as, ‘to make the forest less productive change the forest areas into limited production.’²¹ Normally carbon is emitted from the use of fossil fuel and other harmful gases in the atmosphere. The forest and coastal ecosystem where the latter has a larger volume, stores these carbons for over hundreds of thousands of years. Carbon sequestration, can be defined as the process of capturing carbon dioxide from the atmosphere, it is measured as a rate of carbon uptake per year. The storage by the forest would be considered green carbon and by the coastal ecosystem would be the blue carbon. Once the forest or the ecosystem is destroyed then it is released back into the atmosphere for a second time. Plant is the only organism that uses carbon to make food through the process of photosynthesis. Deforestation makes up a high percentage of carbon emitted into the atmosphere having to match up with the needs of population growth.²²

The REDD+ initiatives came into existence when the UNFCCC adopted the Kyoto Protocol, which came into force when ratified by member States.²³ The Protocol, as mentioned, allows for several ways to deal with the emission issues such as, emission trading and joint implementation venture. These initiatives seem to be focusing more on coastal ecosystem, which has a high capacity of storing blue carbon than the forest. The storage of the blue carbon

²⁰ Danto D. Et al. “ Mangroves Among the Most Carbon Rich Forest in the Tropic” Nature Geoscience. (2011).

²¹ Ball, S. Et al. “ Environmental Law: The Law and policy relating to the protection of the environment.” (Blackstone 1994).

²² Jenkins W.A. “Green Payments for Blue Carbon: Economic Incentives for Protecting Threatened Coastal Habitat” Nicholas Institute Report. NI 11-04

²³ Kyoto Protocol, Kyoto Japan 11th December, 1997. In force 16 February 2005.

will be measured in hectares. It has been realized that a hectare of blue carbon is equivalent to 488 cars emission of carbon dioxide in the United States.²⁴

There are countries with biophysical mitigating potential including the Caribbean. Biophysical Mitigating Potential, is the tones of carbon dioxide equivalent whose release could be avoided through interventions such as payments for blue carbon.²⁵ National Oceanic and Atmospheric Administration (NOAA) are raising awareness about the value of mangroves, salt marshes, and sea-grass in sequestration and storage to encourage conservation of these valuable habitats. Besides serving as a carbon sink, these habitats provide feeding, breeding, and nursery grounds for a wide variety of fish and wildlife species; recreational opportunities such as fishing and bird watching; and protection from coastal storms and extreme weather events. By considering the carbon value of these habitats in policy and management decisions and supporting the development of market based incentives for conservation, NOAA is seeking to create additional protections for these important habitats and the services they provide for future generations.²⁶

Some countries have already started the effort to reduce the emission by the trading of blue carbon. The island of Guyana will be paid in Norway 250 million US dollars in total for their green carbon stock.²⁷ This clearly shows that developed countries are serious about their emission and the reduction of it. It also shows the commitment of working with smaller countries by providing economic resources to conserve their carbon stock be it coastal ecosystem or forest. The trading of carbon initiative will benefit most Caribbean countries being they are coastal State. Instead of destroying their ecosystem for development, they will be paid to conserve it by the new paradigm of the blue carbon market. A recent survey of 2010 in Belize shows that the country has 74,684 hectares of carbon stocks which stretch over three hundred kilometers of coastline ecosystem.²⁸ This paradigm shift would be instead of destroying the ecosystem for development there could be conservation and technical expertise to manage for the benefit of

²⁴ Murray B.C. etal. “ Green Payment for Blue Carbon Economic Incentive for Protecting Threatened Coastal Habitats” (2011).

²⁵ Mckenzie C. etal. “ Science, Medcine and Technologyin Society” World Resources Institute 2004.

²⁶ Jenkins W.A. “Green Payments for Blue Carbon: Economic Incentives for Protecting Threatened Coastal Habitiat” Nicholas Institute Report. NI 11-04.

²⁷ Butler R. <News.mongabay.com> November 09 2009.

²⁸ Danto D. etal. “Mangroves Among the Most Carbon Rich Forests in the Tropic.” Nature Geoscience. (2011).

these coastal States and broader atmospheric cleansing. The conservation would be enhanced as years pass and technical expertise would be gained, which in turn would have further developed the management of these coastal State ecosystems. Presently in Belize it is illegal to cut mangrove; this is legislated in the Belize Environmental Protection Act with a fixed penalty if anyone is caught.²⁹

The present status of the storage of blue carbon for now ties in with the reduction of GHG in the atmosphere. This seems to be the most comprehensive way of reducing emission and at the same time still continue with development. Al Gore former Vice President said, “we have a tremendous challenge in the global economy, I think our approach to the economy is connected to our approach to the environment.”³⁰ Therefore, if Belize intends to benefit from its potential of blue carbon storage it needs to protect its marine environment. Sanctioning the illegal cutting of mangroves is only one of the measures to be taken. Belize needs to take action to protect its environment from other activities. One of such action is the prevention of damage to the marine environment from offshore drilling which is the focus of the next chapter.

²⁹ Belize Environmental Protection Act CAP 328 (Belize) S.10 (1)(2).

³⁰ Felter R. “Gore tackles pollution” (West State USA) 20th October 2011.

Chapter Two

Exploring the history and development of the offshore drilling have come a long way from structure affixed to the seabed to floating structures. There are various types of artificial island, installations and structures for the purpose of exploration and exploitation of natural resources of the seabed. The *Case Concerning Passage Through the Great Belt*,³¹ provided the court with a picture of the different kinds of oil rigs in order to move argument before the court. The International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC) defines “offshore unit’ as any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation or production activities, or loading or unloading of oil.”³² The United Nations Law of the Sea Convention, 1982 (LOSC) gives the coastal State sovereign rights to construct artificial islands but restricted beyond the continental shelf.³³ Sovereign rights are being granted to coastal State for marine resources and exploitation.³⁴ The doctrine of the high sea gives the right to a State of peaceful use of International Sea Bed Area.³⁵

The offshore oil industry goes back to the 1890s, when it began off the coast of California.³⁶ As early as 1909 or 1910, wells were being drilled in ferry Lake in Caddo Parish, Louisiana.³⁷ Around 1950, while development was taking place in the United States waters, the British Petroleum Company was engaged in the exploration off the coast of Abu Dhabi in the Persian Gulf.³⁸ At the moment, offshore structures are sited near shore, in shallow waters or deep water arenas. Fixed platforms, tension leg platforms (TLP’s), floating production systems (FSP), and pipelines are some of the equipments used to produce offshore oil and gas. These can be categorized as small or large steel structures, concrete, floating, and subsea structures.³⁹

³¹ *Passage through the Great Belt*, ICJ, 1991, (1994) 94 ILR 446.

³² International Convention on Oil Pollution Preparedness, Response and Cooperation, adopted at London, November 30, 1990 and in force May 13, 1995. As at September 30, 2002, 66 States were party to this convention, representing 53.67% of world tonnage.

³³ Article 87 (1) (d) LOSC.

³⁴ Article 56 (2) LOSC.

³⁵ Article 141 LOSC.

³⁶ Graff W. J. “Introduction to Offshore Structures,” Gulf Publication Company (1981)p. 4.

³⁷ *ibid.*

³⁸ ³⁸ Graff W. J. *op.cit.* p. 17.

³⁹ Ayoade M.A “Disused Offshore Installation and Pipelines” Kluwer Law International, 2002.

The major advantage of the offshore platform is being able to obtain substance from the subsea in the form of oil and gas. Such substances are then used to provide the basic needs of mankind e.g. food and transportation. The usage of the ocean water is incomparable to its fragileness and, conscious of this fact and its chain reaction of the environment, anti-pollution efforts are eminent.

The ocean is commonly called “ the last frontier” in an economic sense a vast wealth of natural resources yet to be tapped. Offshore oil drilling has already become a main source of petroleum in the last twenty years. Spillage from such drilling operations can be a very large source of oceanic contamination locally and a threat to oceanic wildlife. Mining activities on the seabed may not only add such pollutants to the waters but may also give rise to industrial installations bordering on or built up over the ocean and may add to oceanic pollution, such as refineries and sand-and-gravel processing plants.

The LOSC 1982⁴⁰ further imposes on States party the duty to take measures to prevent, reduce and control pollution of the marine environment from vessels, platforms, land-based sources, dumping and the atmosphere, as well as to take enforcement measure. The State party has a duty to prevent, reduce and control marine pollution.⁴¹

The transportation of the oil from these platforms in the ocean water represents another threat to the pollution of the marine environment. According to the statistics compiled by by the Group of Expert on the Scientific Aspects of Marine Pollutions (GESAMP) in 1999, 1 percent of pollution to the marine environment is contributed from oil exploration and production, which include the usage of oil tankers and pipelines on the seabed.⁴²

Two categories of the sources of marine pollution are related to the use and operation offshore oil rigs. These are oil exploration and production, which directly relate to oil rigs and dumping which can be done with oil installation and can include offshore disposal of installations.

⁴⁰ Adopted at Montego Bay, Jamaica, December 10, 1982 and in force November 16, 1994.

⁴¹ Article 194 of the LOSC.

⁴² Gold E. “Gard Handbook on Marine Pollution, Gard (1997) p. 288

Furthermore, the chances of a catastrophic blowout always exist. Several major accidents have occurred, the first serious one being Ixtoc I disaster in the gulf of Mexico on 3 June, 1979. As a result of this accident, oil slick damaged shrimping and tourist industries.⁴³ Following this disaster a series of lawsuits were instituted against the Mexican Government and the relevant companies. The latest was again in the Gulf of Mexico, the blowout of an oil rig created extensive damage amounting to 8.7 billion in settlement by the British Petroleum Company.⁴⁴

The transporting of the oil by tankers has led to a number of incidents involving oil spills starting with the Torrey Canyon, Amoco Cadiz, Exxon Valdez, and Sea Impress incident.⁴⁵ The pollution from pipelines is another concern it has been noted that a daily average of 800000 liters of oil is leaking into the sea every day throughout the world.⁴⁶ These areas of pollution can be avoided with the advancement of new technology and having more trained human resources in the operation of oil rigs and its transportation.

The new phenomenon of the decommissioning of the offshore drilling platform cannot also be disregarded. The decommissioning of offshore oil rigs is the process of deciding how to remove and dispose of the installation when they reach the end of their economic lives. It is an important issue in relation to the entire process of the production of oil from oil rigs. The dumping of oil rigs at sea has created a range of international debates in recent years and has been discussed in both international treaties, such as the LOSC⁴⁷ and by organizations, such as the International Maritime Organization (IMO). The dumping of offshore platforms affects the marine environment. The substances found in and on a rig such as steel, concrete and residual amounts of heavy metal or hydrocarbons and drill cuttings, may cause severe damage to the marine environment. Some of the materials and substances on the platforms are toxic and harmful to the fish and other marine biota. It has also been said that the use of explosive materials by oil

⁴³ Fender JE. "Note Trouble Over Oiled Waters: Pollution Litigation or Arbitration- The Ixtoc I Oil well Blew – Out" (1980) 4 Suffolk Transnat'l L.J 281 at 282.

⁴⁴ Democker Micheal "Explosion of oil rig Deep Water Horizon in Gulf of Mexico" 24.04.2010.

⁴⁵ Churchill R.R "The Law of the Sea" Third edition, Manchester Press (1999).

⁴⁶ Patin S. "Environmental Impact of the Offshore Oil and Gas Industry" (2010).

⁴⁷ Article 60 (3) LOSC.

companies to free the rig's legs from the sea bottom destroys the surrounding sea life.⁴⁸ Unfortunately, the dismantling and removal of an offshore installation is usually more difficult and more costly than the installation of the original structure. In some cases it is possible to reverse the installation procedure, but in others more difficult and innovative techniques are required. This is a legacy of the fact that no thought was given to removal at the time platforms were designed and installed from the 1950s to the early 1980s. At that time, the primary objective of the oil industry was to develop offshore reserves as quickly as possible.⁴⁹

Considering the above, the major problem of marine pollution in the ocean waters has been the focus of various international conventions.⁵⁰ The next chapter discusses the international response to pollution of the marine environment and the applicability of such response to pollution from offshore activities.

In 1990, the OPRC⁵¹ was adopted, to require oil pollution emergency plans for ships and offshore installations, at ports and oil handling facilities, as well as national and regional contingency plans for prevention, response and cooperation in respect of oil spills.

The LOSC gives the coastal State sovereignty in the territorial waters⁵² and sovereign rights in the exclusive economic zone (EEZ).⁵³ The coastal State has sovereignty over its territorial waters. This sovereignty extends to the air space over the waters as well as to the seabed and subsoil under water.⁵⁴ Although it is not mentioned expressly in the LOSC, a coastal State, by virtue of its sovereignty over its territorial sea, has the authority to build offshore oil rigs and

⁴⁸ Macdonald JM. "Artificial Reef Debate: Habitat Enhancement or Waste Disposal?" (1994) 25 ODIL 87 at 94.

⁴⁹ Ayoade M.A "Disused Offshore Installations and Pipelines" Kluwer Law International, 2002 p. 2.

⁵⁰ Gold E. Gard Hand book on Marine Pollution, 2 Ed, Assuranceforeningen Gard, Arendal, Norway, 1998 at pp. 220-251.

⁵¹ Article 2 (4)OPRC.

⁵² Article 2 (1) of the LOSC.

⁵³ Article of the LOSC.

⁵⁴ Article 2 (1) of the LOSC.

other installations within its territorial waters.⁵⁵ Provision I of the Informal Working Paper No. 12, prepared during the second (Caracas) Session of the Third United Nations Conference on the Law of the Sea (UNCLOS III), provided that ‘the coastal State is entitled to construct artificial islands or immovable installations in its territorial sea.’⁵⁶ This proposal embodied certain provision specific with respect to exploration and exploitation of the natural resources of the territorial sea. The sovereignty over its territorial sea entitles the coastal State to enact all the necessary laws for the protection of the marine environment. Article 21 states *that “ The coastal State may adopt laws and regulations, in conformity with the provisions of this Convention and other rules of international law, relating to innocent passage through the territorial sea, in respect of all or any of the following: (f) the preservation of the environment of the coastal State and the prevention, reduction and control of pollution thereof;”*.

The coastal State has an EEZ measured from the baseline up to 200 nautical miles. The coastal State has jurisdiction over all installations in the EEZ and LOSC also gives general jurisdiction to the coastal State with respect to ‘the protection and preservation of the marine environment.’⁵⁷ This means that the coastal state does have jurisdiction over all activities on the seabed of its EEZ concerning the protection of the marine environment. The coastal State is clearly under an obligation to take measures and adopt laws and regulations to control and prevent pollution from offshore oil installations under its jurisdiction,⁵⁸ although the nature of these provisions is not entirely clear.

⁵⁵ Honien S.E et al, “the International Law Relating to Offshore Installations and Artificial Islands, Lloyds of London Press (1991) p. 4.

⁵⁶ UNCLOS III, Committee II, Informal Working Paper No. 12, 20 August 1974.

⁵⁷ Article 56 of the LOSC.

⁵⁸ Article 208 of LOSC.

Chapter Three

It is crucial to understand the comparative application of the legal system on pollution in the different jurisdiction. Coastal State and Flag State have the responsibility to apply laws or domesticate theirs to prevent pollution at the local and international level. 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 60 and 80.⁵⁹ Flag State shall ensure compliance by vessels flying their flag or of their registry with applicable international organization or general diplomatic conference, and with laws and regulations adopted in accordance with this Convention for the prevention, reduction and control of pollution of the marine environment from vessels and shall accordingly adopt laws and regulations and take other measures necessary for their implementation. Flag States shall provide for the effective enforcement of such rules, standards, laws, and regulations, irrespective of where a violation occurs.⁶⁰ As far as the installation for exploring and exploiting sea-bed oil and gas is concerned, some deliberate pollution results from such structures, for example the disposal into sea of domestic refuse, industrial debris and relatively small amount of oil and chemical waste from drilling. Furthermore in case of platforms the water that surrounds them provides the perfect means of disposal and the final destination of all their waste, solid, liquid or gases. Marine pollution is, therefore, the most immediate repercussion of their activities, especially as it also includes pollution from air and abundance of chemicals dissolved in ocean waters.⁶¹ Accidental pollution may result from blow-outs (as in the case Macondo in the gulf of Mexico the latest incident);⁶² from the collisions between ships and installations; or from the breaking of pipelines, either through natural wear and tear or through being fouled by a trawl.⁶³ Ship transporting oil from this offshore platform may also suffer from the perils of the sea and cause massive pollution such as Torrey Canyon off Land's End in 1967, Exxon Valdez in Alaska in

⁵⁹ Article 208 of the UNCLOS.

⁶⁰ Article 217 of UNCLOS.

⁶¹ Cuyvers "Ocean uses and their regulation" New York/Toronto 1984.

⁶² Bubenheimer F. "Paper on International Political Economy" Berlin 8/2011.

⁶³ Churchill R.R op. cit. p. 330.

1989 and Sea Empress off south-west Wales in 1996, just to name a few.⁶⁴ According to traditional international law, states are not under a duty to regulate pollution at sea although they are empowered to do so.⁶⁵ This was changed by the conclusion of the 1982 LOSC, Section V of the UNCLOS III⁶⁶ obliges State to adopt laws and regulation in regard to different sources, including pollution from offshore oil installations.⁶⁷

The international community has responded to marine pollution by concluding a number of global and regional conventions concerned with marine pollution. There are now more than 85 international conventions and other instruments related to marine pollution, liability and compensation for oil pollution and maritime safety.⁶⁸ However, there is no comprehensive international treaty which deals with pollution from offshore oil rigs.⁶⁹ Nonetheless, there are a few provisions in a number of international conventions which deal with the issue of pollution from the exploration and exploitation of seabed mineral resources. Since offshore operations in relation to the exploration and exploitation of oil are an expanding source of pollution, in recent years more attention has been placed on the regulation of pollution from offshore activities in international instruments.

In searching for answers to the question as to whether there is a customary obligation in international law, beyond the constraints of conventional rules, for States not to pollute the marine environment, two important points should be considered. Firstly, the issue of the prevention of marine pollution in international law is of recent origin, and therefore the customary obligation of international law appears to be vague and immature. Secondly, there is the question as to whether there is any general principle of law binding upon all States with

⁶⁴ Churchill R.R op. cit. p. 328.

⁶⁵ Boyle A.E. "Marine Pollution under the Law of the Sea Convention" (1985) 79 AJIL 347 at 351.

⁶⁶ Article 207-212 of the LOSC.

⁶⁷ Article 208 of the LOSC.

⁶⁸ Gavouneli M. op. cit. pp.12- 15.

⁶⁹ Gavouneli M. op. cit pp. 56 -62.

respect to environmental pollution, particularly that which arises from offshore mining and drilling.⁷⁰

The most important principle, which may support an obligation in international customary law in relation to the marine environment, is the principle of *sic utere tuo, ut alienum non laedas*.⁷¹ This means that States are not allowed to use their own territory in such a manner as to cause any damage to the territory of another state. This principle is supported by both the Charter of the United Nations and the General Assembly Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among States.⁷² The Principle was also referred to in a number of cases, such as the *Corfu Channel*⁷³ and the *Nuclear Test Cases*,⁷⁴ and international documents such as the Charter of Economic Rights and Duties of States⁷⁵ and the LOSC.⁷⁶ The most notable reference to the principle of *sic utere tuo* is made in Principle 21 of the 1972 Stockholm Declaration on Human Environment: “ States have, in accordance with the Charter of the United Nations and Principles of international law... the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”⁷⁷ The Stockholm Declaration is not legally binding document. However, it has attracted recognition as a rule of customary international law.⁷⁸

There are some *Conventions* with provisions complementing customary international law that covers the pollution from offshore drilling platforms. Some of these conventions include: *International Convention for the Prevention of Pollution from Ships (MARPOL)*,⁷⁹ *International Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter*

⁷⁰ Gavouneli M. op. cit. pp. 24 -27.

⁷¹ Black HC , Law Dictionary, West Publishing Co, 5 (1979) p. 1238.

⁷² UN Doc A/8082 (1970).

⁷³ (1949) ICJ Reports 4 at 22.

⁷⁴ (1973) ICJ Reports 99 at 106.

⁷⁵ Article 30, UN Doc A/9559 (1974).

⁷⁶ Article 194 (2).

⁷⁷ UN Document A/CONF 48/14, 16 June 1972 p. 1416.

⁷⁸ Birnie PW. “ International law and the Environment”, Clarendon Press (1992) pp. 91-92.

⁷⁹ MARPOL Convention London on November 2, 1993.

(*London Convention*),⁸⁰ *International Convention on Oil Pollution Preparedness, Response and Cooperation*, (*OPRC*)⁸¹, *International Convention for the Protection of the Marine Environment of the North-East Atlantic*,⁸² *The Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention)*.⁸³ Some international organization are assisting in making enforcement guidelines for States on offshore pollution and how it will affect offshore drilling.

The *MARPOL Convention* was adopted under the auspices of the IMO to deal with all forms of intentional pollution of the sea from ships, other than dumping. This was with the view to replace the 1954 *Convention*, defined a ship as: ‘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.’⁸⁴ The *Convention* clearly applies to all kinds of oil rigs. The *travaux préparatoires* of the 1973 *Convention* reveal that there was some discussion as to whether fixed and floating platforms should be included within the definition of ‘ship’.⁸⁵ The Government of Finland remarked that ‘the extension of the word ship to cover all kinds of platforms, drilling rigs, etc. causes unnecessary confusion.’⁸⁶ A similar position was held by other governments such as Canada, which proposed an alternative text to excluding platforms engaged in the exploration, exploitation and associated processing of seabed natural resources when they are not in transit.⁸⁷ The question of whether fixed and floating platforms should be considered as a ‘ship’ for the purpose of the *Convention* was discussed on a number of occasions. The proposal to delete ‘fixed and floating platforms’ from the definition of ‘ship’ were defeated at least five times. Finally, at the Tenth Plenary Meeting the proposal for the deletion of the terms ‘fixed or floating platforms’ was rejected and the final text was adopted.⁸⁸ The problem with *MARPOL* it deal with oil pollution from ships and not offshore drilling.

⁸⁰ London Convention, December 29, 1972.

⁸¹ OPRC 1990.

⁸² Oslo and Paris Convention (OSPAR) 1992.

⁸³ Barcelona Convention 1976.

⁸⁴ Article 2 (4) MARPOL 1973.

⁸⁵ The Memorial of Finland note supra, Map and Annexes, p. 274-275.

⁸⁶ IMO Doc MP/CONF/8/7, 3 July 1973.

⁸⁷ IMO Doc MP/CONF/C.1/WP 5, 10 October 1973.

⁸⁸ The Memorial of Finland note supra, Map and Annexes, p. 275

The *London Convention* defined ‘Dumping’ as ‘any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea; any deliberate disposal at sea of vessels, aircraft, platforms, or other man-made structures at sea.’⁸⁹ ‘Vessels and aircraft means waterborne or airborne craft of any type whatsoever. This expression includes air cushioned craft and floating craft whether self propelled or not.’ Although all kinds of oil rigs are not included in the definition of ‘vessels’ in the convention, they would all fall within the expression ‘... Platforms or other man made structures at sea’.⁹⁰ The 1996 Protocol subjected to permit and procedures of Annexes II and III covers some aspects waste from continental shelf oil and gas installations.⁹¹ In this protocol there were some form of regulation to protect the marine environment from such pollution.

The *OPRC Convention* requires States Parties to take all appropriate measures, based on the provisions of its article to prepare for and respond to oil pollution incidents. The Convention expressly covers oil pollution from offshore oil rigs. The *Convention* refers to oil pollution from an ‘offshore unit’, which is defined as ‘any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation or production activities, or loading or unloading of oil.’⁹² Operators of offshore units have an obligation to formulate oil pollution emergency plans.⁹³ The person in charge of offshore units must report and event involving a discharge of oil.⁹⁴ A State Party may take action on receiving an oil pollution report.⁹⁵ The *Convention* further refers to the establishment of national and regional systems for preparedness and response,⁹⁶ international cooperation in pollution response,⁹⁷ cooperation research and development and traditional cooperation.⁹⁸ Parties to the *Convention* agree to enter into bilateral or multilateral treaties for oil pollution preparedness and response.⁹⁹ The IMO, subject to its agreement, is designated to perform various functions in relation too information services, education and

⁸⁹ Article III (a) of the London Convention 1972.

⁹⁰ Article III (2) of the London Convention 1972.

⁹¹ Churchill R.R. Et.al op. cit. p. 366.

⁹² Article 2 OPRC.

⁹³ Article 3 OPRC.

⁹⁴ Article 4 OPRC.

⁹⁵ Article 5 OPRC.

⁹⁶ Article 6 OPRC.

⁹⁷ Article 7 OPRC.

⁹⁸ Article 8 and 9 OPRC.

⁹⁹ Article 10 OPRC.

training, technical services and technical assistance.¹⁰⁰ The *Convention* requires that there is a regional and national contingency plan for prevention, response and cooperation in respect of an oil spills. These plans should include coastal State that would like be affected by the offshore activities.

The *OPRC* is the most important international treaty that addresses the issue of pollution from oil rigs in an efficient manner. The *Convention* defines ‘Offshore Units’ to include all mobile and fixed oil rigs. It then provides a number of specific provisions in relation to pollution from offshore oil rigs. Furthermore, pollution from activities related to oil rigs, such as loading and unloading, is covered.

The parties¹⁰¹ to the *Oslo and Paris Convention (OSPAR)*, are required to prevent pollution from offshore source and comply with the rules set out in the *Convention*.¹⁰² The term ‘offshore sources’ is defined by the *Convention* as ‘offshore installations and pipelines from which substances or energy reaches the maritime area.’¹⁰³ ‘Offshore installations’ according to the *Convention*, means ‘any man-made structure, plant or vessel or parts thereof, whether floating or fixed to the seabed, placed within the maritime area for the purposes offshore activities.’¹⁰⁴ The term ‘offshore activities’ is defined as ‘any activities carried out in the maritime area for the purposes of the exploration, appraisal or exploitation of liquid and gaseous hydrocarbons.’¹⁰⁵ The *Convention*, clearly obliges the contracting States to take all possible steps to prevent and eliminate pollution from offshore installations for the purpose of exploration of the seabed and exploitation of its natural resources.¹⁰⁶ The use of, or discharge or emissions of substances which may affect the marine environment area from offshore sources are not prohibited but are strictly subject to authorisation or regulation of the competent authorities of the Contracting Parties.¹⁰⁷

¹⁰⁰ Article 12 A OPRC.

¹⁰¹ The OSPAR Convention has been signed by all of the parties to the OSLO or Paris Conventions: Belgium, Denmark, the Commission of the European Communities, Finland, France, Germany, Iceland, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland. It was signed by Luxembourg and Switzerland.

¹⁰² Article 5 OSPAR Convention.

¹⁰³ Article 1 (k) OSPAR Convention.

¹⁰⁴ Article 1 (1) OSPAR Convention.

¹⁰⁵ Article 1 (j) OSPAR Convention.

¹⁰⁶ Article 5 OSPAR Convention.

¹⁰⁷ Annex III of OSPAR Convention.

The *Barcelona Convention* is a very significant regional instrument in the Mediterranean Sea. There are 21 distinct coastal States over three continents with different economic and political systems.¹⁰⁸ In addition, the exploration and exploitation of the natural resources of the Mediterranean Sea have increased in recent years.¹⁰⁹ The convention has adopted five protocols including 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.¹¹⁰ The Protocol provides that coastal States where offshore activities are being carried out or envisaged in their jurisdiction should take the necessary measures regarding design, construction, placement, equipment, marking and maintenance of offshore installations.¹¹¹ The installations should be equipped, devised, and maintained in good working order to prevent and combat accidental pollution and facilities prompt response to emergency situations.¹¹² The coastal State should require the operator to measure the effects of the activities on the environment and to report on them periodically or upon request, for the purpose of an evaluation of such competent authority.¹¹³ The Protocol also includes certain provisions in relation to the removal of offshore platforms. Finally, the Protocol includes certain provisions concerning contingency planning, use of harmful or noxious substances, disposal of oil and oily mixtures from installations and liability and compensation.¹¹⁴

The *1992 Helsinki Convention*,¹¹⁵ which applies to the Baltic Sea, is another important regional treaty dealing with marine pollution from various sources. It contains detailed provisions on measures concerning the prevention of pollution from land-based sources,¹¹⁶ ships,¹¹⁷ and

¹⁰⁸ Gavouneli M.

¹⁰⁹ Ross D.A, “General Oceanographic Setting of, and Recent Offshore Hydrocarbon Activity in the Mediterranean,” IJO/UNEP Experts Meeting, Rome, 11-15 December, 1978, Background Paper No. 1 Part C pp. 22-23.

¹¹⁰ The draft Protocol was submitted to the parties of the Barcelona Convention held in Athens in 1987. It was finally concluded in October 1994.

¹¹¹ Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and Seabed and its Subsoil, 1994, Art 15 (1).

¹¹² Article 15 (2) Barcelona Convention.

¹¹³ Article 19 (1) Barcelona Convention.

¹¹⁴ Article 20 Barcelona Convention.

¹¹⁵ *Convention for the Protection of the Marine Environment of the Baltic Sea Area 1992*, adopted 9 April [1992, 1507 UNTS 167](#) (entered into force 17 January 2000), (*‘1992 Helsinki Convention’*). Ratified by Russia on 15 October 1998. The *1992 Helsinki Convention* replaced the *Convention on the Protection of the Marine Environment of the Baltic Sea Region 1974*, adopted 22 March [1974, 13 ILM 1974](#) (entered into force 3 May 1980), (*‘1974 Helsinki Convention’*). Discharges of oil and garbage from fixed and floating offshore platforms are regulated by the *1992 Helsinki Convention* similarly to *MARPOL 73/78* provisions.

¹¹⁶ *Ibid.*, annex III, art 6.

offshore activities.¹¹⁸ The Convention also regulates the dumping of wastes and other matter in the Baltic Sea area,¹¹⁹ and completely prohibits incineration of ship-generated wastes and other matter at sea.¹²⁰ Contracting parties are also required to eliminate and prevent pollution caused by harmful substances from all sources.¹²¹ The *Convention* defines ‘harmful substance’ as any substance that may cause pollution if introduced into the sea,¹²² and provides a list of harmful substances including substances banned for all final uses.¹²³ In addition, the *1992 Helsinki Convention* requires State parties to adopt ‘best environmental practices’ and ‘best available technology’, sets out criteria for the use of ‘best environmental practices’ and ‘best available technology’, and specifies measures to be applied by state parties in order to satisfy this requirement.¹²⁴ The *Convention* defines concepts such as ‘offshore activity’, ‘offshore unit’, ‘exploration’, and ‘exploitation’,¹²⁵ and regulates discharges during exploration and exploitation stages.¹²⁶ Abandoned, disused, or accidentally wrecked offshore units must be entirely removed and brought to the shore, and disused drilling wells must be plugged.¹²⁷ Similar to regional conventions discussed above the *Convention* contains traditional provisions on environmental impact assessment, monitoring, notification of pollution incidents, exchange of information, cooperation in combating marine pollution, and it also specifies measures for responding to marine pollution incidents including contingency planning.¹²⁸

Some international organization assisting in making enforcement guideline for States on offshore pollution and how it will affect offshore drilling. The IMO has produced a number of recommendations and resolutions concerning pollution caused by offshore platforms. In 1979 a recommended Code for the Construction and Equipment of Mobile Offshore Drilling Units (MODU)¹²⁹ was produced by the IMO. This recommendation was intended to provide

¹¹⁷ Ibid., annex IV, art 8.

¹¹⁸ Ibid., annex VI, art 12.

¹¹⁹ Ibid., annex V, art 11.

¹²⁰ Ibid., annex IV, art 10, reg 7.

¹²¹ Ibid., art 5.

¹²² Ibid., art 3(7).

¹²³ Ibid., annex I, pt 2.

¹²⁴ Ibid., annex II, art 3(3), annex VI, reg 2.

¹²⁵ Ibid., annex VI, reg 1. ‘Offshore unit’ is defined as ‘any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation or production activities, or loading or unloading of oil’.

¹²⁶ Ibid., annex VI, regs 4, 5.

¹²⁷ Ibid, annex VI, reg 8.

¹²⁸ Ibid., arts 7, 13, 14, 16, annex VI, regs 3, 6, 7, 9, annex VII.

¹²⁹ IMO Assembly Resolution A. 414 (XI), 15 November 1979.

international regulations with respect to the technical matters of offshore installations. The MODU Code was revised in October 1989 and came into effect on 1 May 1991.¹³⁰ The Code is not mandatory but a number of States have applied it.¹³¹

The Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution¹³² obliges the contracting parties to take ‘ all appropriate measures to prevent , abate and combat pollution in the Sea Area resulting from exploration and Exploitation of the bed of the territorial sea and its sub-soil and the continental shelf, including the prevention of accidents and the combating of pollution emergencies resulting in damage to the marine environment.’¹³³ It includes three Protocols, one of which is the 1889 Kuwait Protocol concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf.¹³⁴ This Protocol is the first United Nations Environmental Program (UNEP) document concerning offshore pollution.¹³⁵ It followed a set of guideline on the prevention of pollution from offshore mining and drilling prepared by UNEP.¹³⁶

The next chapter will show how developing countries such as Belize have limited legislation to protect its waters from offshore platform activities pollution.

¹³⁰ IMO Resolution A. 696, 16 October 1989.

¹³¹ Brown E.D “Seabed Energy and Minerals: the International Legal Regime, Martinus Nijhoff (1992) Vol. I, p. 422.

¹³² Concluded in Kuwait, 24 April 1978, entered into force, 1 July 1979, 1140 UNTS 133, The Parties to the Convention are Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates.

¹³³ . The Kuwait Regional Convention for co-operation on the Protection of the Marine Environment from Pollution, Art VII.

¹³⁴ Kuwait, 29 March 1989, in force 17 February 1990.

¹³⁵ Gavouneli M. op. cit. pp. 162-164.

¹³⁶ Ibid.

Chapter Four

The Belize's perspective is the protection of the marine environment from pollution in its adjacent water to its ecosystem and coastline from the exploitation and exploration of oil platform. These areas though will be threatened by offshore drilling if the proper mechanism, legislation and infrastructure are not formulated by the delegated authority or government. Belize has the longest barrier reef in the northern hemisphere, extending 220 kilometers from the Mexican border in the north to the Gulf of Honduras in the south.¹³⁷ The coral reef creates a natural carbon sink which has a great potential for the storage of blue carbon. Coral reefs, as one kind of variety of coastal habitats, are one of the most productive and biologically the richest ecosystems on the earth.¹³⁸ Coral reefs are usually found in the tropical coastlines, islands and archipelagoes that are built by tiny living organism call coral. Coral reefs are home to an abundance of diversity of species and are often referred to as the forest of the ocean.¹³⁹ Many living species depend on the continuation of the existence of healthy coral reef or they will extinct in time if their habitat is damaged. Coral reefs cannot be replaced and is formed very slowly by tiny animals called "corals." The coral reefs, in their present form have been formed over hundred of thousand years. The rapidest period of reef growth has shown upward accumulation of reef structure reaching 9 – 15 meters in 1000 years.¹⁴⁰ That is why coral reefs are considered to be amongst the oldest ecosystem on earth. Coral reefs can be used as coastal protection. Its structure can serve as natural protection of the coastline and its communities against waves and storms; Belize being a perfect example since some part is below sea level. In light of this major destruction that can lead to loss of life, property damage or erosion can be prevented. The physical structure of coral reefs protects an estimated 150.000 km of shorelines in more than 100 countries.¹⁴¹ In Belize, lying behind the barrier reef, is an enormous lagoon system averaging 25 kilometers between the mainland and open Caribbean sea. The reef is followed by mangroves which are cordon to the coastline, which is another contributor to the carbon sequestration and the ecosystem. The diverse ecosystem with a mix of lagoon patch

¹³⁷ Godfrey G. "The Belize Barrier Reef" Published Cubola Production Benque Viejo Del Carmen September 2000.

¹³⁸ Hassan D. "Protecting the Marine Environment from Land-based Sources of Pollution" Ashgate Publishing Limited 2006, p. 1

¹³⁹ Ibid.

¹⁴⁰ Spalding M.D. etal, "World Atlas of Coral Reefs" University of California Press, 2001, p. 15.

¹⁴¹ Burke Lauretta etal. "Reef At Risk Revisited" World Resorce Institute, Washington, D.C 2011. p. 11.

reefs, fringing reefs, and offshore atolls are always under an imminent threat of offshore drilling activities.¹⁴² The northern reefs are well developed and continuous from Mexico to Caye Chapel, and then discontinuous and less developed south to the St. Georges Caye. The central reefs are continuous and well developed, whereas the southern reefs are discontinuous and less well developed.¹⁴³ The many patch reefs to the south of the central barrier are dominated by *Montastraea annularis- boulder shape coral that live in the western Atlantic ocean*.¹⁴⁴ Lighthouse, Turneffe, and Glovers are offshore atolls with different coral communities on leeward and windward slopes. Turneffe has extensive mangroves in a shallow lagoon, while the others have deep lagoons and many patch reefs.¹⁴⁵ Belize is relatively sparsely populated and the coral reefs are important for commercial and artisanal fishing, and aquaculture. Tourism and the export of marine products are increasing rapidly, but the coastal populations are decreasing. The Barrier Reef as a World Heritage Area is to be sustained by the Government to preserve its existence for future generations of Belize and the hemisphere.

Mangroves border most the coastline, extending upstream of the countless river mouths and fringes or cover most lagoon cays, documenting the biology, geology, ecological balance, economic importance, and aesthetic value of a prominent coastal ecosystem. The inventory of species has yet to be completed, but the most phyla are represented by species of which 10 to 25 percent, and in some microscopic-sized groups up to 60 percent, are undescribed.¹⁴⁶ The red mangrove fringe, the specialized vegetation, the physical environment, and the associated fauna and flora form a complex and diverse island community above water as well as below. The mangrove community itself can be thought of as being composed of three components: the above-water “forest”, the intertidal swamp and the underwater system.¹⁴⁷ Belize mangroves, salt marsh and its wetland, like of other coastal States, serve as a blue carbon sink as explained in the opening chapter. It has been noted that carbon captured by living organisms in the oceans is stored in the forms of sediments from mangroves, salt marshes and sea grasses. The mangrove

¹⁴² *ibid*

¹⁴³ *ibid*

¹⁴⁴ Dawson J.P “ Quantifying the Colony Shape of the Species Complex” Coral Reef Vol. 25 383-389 2006.

¹⁴⁵ Almada- Villela P. “Status of Coral Reef of MesoAmerica – Belize” 2002.

¹⁴⁶ Rutzler K. etal. “Mangoves Swamp Communities: A Belize Approach” Oceanus (Vol. 30 (40) 16-24. 1999.

¹⁴⁷ *Ibid*

produces fine sediment and organic detritus and stabilize them by modifying the wave and current regime of the open lagoon. Furthermore, the mangrove swamp is rich in recycled nutrients and high production rates but its occupants are severely stressed by factors such as salinity, temperature fluctuations, desiccation potential, and size grain sediment.¹⁴⁸ The mangrove uses carbon through the process of photosynthesis to produce food and at the same time store the carbon in the sea bed.

This process however, can be further complicated by the pollution from oil platform which usually has an adverse effect to the coastal ecosystems. This would cause the mangrove to die and releases the carbon stored back into the atmosphere which would have an adverse effect on the temperature. Then there is the threat to the barrier reef as an underwater heritage by offshore platforms pollutions, which pose a daily threat when an oil exploration is in progress. The formulation of legislation to protect the barrier reef and its ecosystem will discuss in the next chapter.

The regulation in Belize to protect the marine environment like many other international regulations are limited for offshore platform and the limited piece of legislation have not been put to the test extensively as yet. Nevertheless, there is a non-governmental organization OCEANA- Belize,¹⁴⁹ which has won a court case, showing their active role against offshore drilling in Belize.¹⁵⁰ The aim of this group is to preserve the ecosystem in its virgin state and for future generation to have such benefits. Further to that group is the Protected Area Conservation Trust (Belize),¹⁵¹ operating in Belize which is very active and keen when it comes to environmental activities including seabed. Presently OCEANA- Belize has a case before the Belize Supreme Court challenging the Government and an oil company disallowing offshore drilling on the seabed for oil in Belize Exclusive Economic Zone.¹⁵² These non governmental groups are complemented by local legislation.

¹⁴⁸ Ibid

¹⁴⁹ OCEANA-Belize 2000.

¹⁵⁰ Sharpless A. "Victory for OCEANA-Belize in the Supreme Court," 24.8. 2012.

¹⁵¹ Protected Area Conservation Trust (Belize) 1980.

¹⁵²Section 6 of the Belize Maritime Areas Act, 1992.

The Belize Petroleum Act is vague and only a few sections seem applicable to offshore drilling such as: a contractor shall ensure that all petroleum operations are carried out in accordance with this Act, the regulations and the provisions of the contract, and with generally accepted practices in the international petroleum industry.¹⁵³ Further this Act has some section, that are very vague when it comes to offshore drilling platforms such as the following: control the flow and prevent the waste or escape of petroleum,¹⁵⁴ water, drilling fluids, or any mixture thereof, generally adopt the necessary measure, for the protection of flora, fauna and other natural resources;¹⁵⁵ avoid the pollution or contamination of water, atmospheric or terrestrial;¹⁵⁶ upon the termination of the contract, carry out all clean-up operations and render the contract area safe; and Conservation and work practices.¹⁵⁷ Mangroves are key to the ecosystem of Belize. In that retrospective legislation were made to specifically protect them from any sort of destruction with fixed penalty in Belize.¹⁵⁸

Belize being a Commonwealth country would benefit from the Commonwealth Sea Installation Act which was concluded to ensure that sea installations are operated in a manner that is consistent with the protection of the environment.¹⁵⁹ The Act is intended to ensure that the operation of offshore installations is consistent with the protection of the environment.¹⁶⁰ An operator of an offshore installation is guilty of an offense ‘ where a sea installations are installed in an adjacent area otherwise than in accordance with a permit.’¹⁶¹ This Act however, would only assist in a vague manner since it relate to any ‘environment related activities.’ Environment related activity is defined as any activity relating to: tourism or recreation; the carrying on off the seabed or of the subsoil of the seabed, whether by way of fishing, pearling, oyster farming, fish farming, or otherwise; marine archaeology; or a prescribed purpose; and includes a scientific activity and transport activity. ‘ The oil and gas drilling activities are not included in the

¹⁵³ Section 24 (1) Petroleum Act 225 of the Laws of Belize R.E 2010.

¹⁵⁴ Section 24 (1) (c) Of the Petroleum Act Chapter 225 R.E 2010.

¹⁵⁵ Section 24 (1) (d) Of the Petroleum Act Chapter 225 R.E 2010.

¹⁵⁶ Section 24 (1) (e) Of the Petroleum Act Chapter 225 R.E 2010.

¹⁵⁷ Section 24 (1) (i) of the Petroleum Act, Chapter 225 R.E 2010.

¹⁵⁸ Section 10 (10 (2) of the Belize Environmental Protection Act, Chapter 328 R.E 2010.

¹⁵⁹ Section 2 (3) (c) Commonwealth Installation Act, 1987.

¹⁶⁰ Section 3.

¹⁶¹ Section 14 (1)

definition of ‘environmental related activities.’¹⁶² Therefore, the Act does not actually regulate environmental issues related to the exploration and exploitation of offshore oil and gas but would cover some aspects of pollution. Belize as shown has limited regulations to regulate pollution from offshore drilling activities and there will not be a balance since there is a rich flora and fauna ecosystem. Therefore, there is a need for new regulations to be formulated to take on such task and to deal with all the relevant problems the offshore industry creates.

¹⁶² Section 4 (3)

Conclusion

The majority of the ocean water is used for commercial purposes to improve or for the survival of the human population of the planet Earth. This paper though looked conclusively at the offshore petroleum industry subject to relatively few international regulations. Few international efforts have been made to put a universal convention that would provide effective regulation for all aspects of offshore oil and gas activities. The OPRC¹⁶³ could be said to be the most competent international convention that gives a good appreciation of offshore drilling and tries to encapsulate all the activities but not enough to take on the offshore industry. The Convention underpins the importance of careful planning and efficient response mechanism as necessary tools for the curbing of incidents of marine pollutions. It has been stated though that the offshore industry produces little marine pollution compared to other sources and this may have been the cause of not seeing a prompt international convention. Many existing bilateral agreements also appear to adequately satisfy the needs of the parties of the offshore industry at this time. However, the most important reason is that, at this stage, advocates for the international convention on offshore units have been unable to muster sufficient governmental support, without which there is very little possibility of such convention being adopted internationally.¹⁶⁴

While a number of legal instruments covering pollution from offshore installations have been implemented in regions such as the North-Atlantic and Mediterranean, other areas with offshore activities, such as the North-West Pacific, do not have such conventions.¹⁶⁵ Most oil and gas operations are conducted on the continental shelf under the direct control of the coastal State. All States that participate in the offshore industry have an obligation to regulate hydrocarbon development in accordance with international law; however, domestic legislation becomes of critical importance in the areas where there is no effective regional instrument or the applicable international agreement governing this activity. Many coastal nations have already developed national legislation and standards that effectively deal with pollution aspects of the offshore petroleum industry, but some States have failed to do so.¹⁶⁶ This is because every country faces a

¹⁶³¹⁶³ Shaw R. “The FSPO- Is It A Ship? The proposed CMI Offshore Mobile Convention – An Update” AMPLA Yearbook, 2000, p. 83.

¹⁶⁴ *ibid*

¹⁶⁵ White M. ‘Marine Pollution Laws of the Australasian Region, 1994, p.4.

¹⁶⁶ Esmaelili H. “The legal Regime of Offshore Oil Rigs in International Law, 2001, pp. 228-49.

different set of problems, and successful implementation of a sophisticated environmental regime is largely dependent upon the country's economic development, political factors, and the relative importance of the offshore industry for the national economy.¹⁶⁷ The industry, being a commercial one, has underestimated the effects of pollution and its double effect when it comes to blue carbon. The damage of the ecosystem vegetation has so many chain reactions as will be explained in the below.

In the area of ecosystem vegetation, oil pollution in many intertidal creeks and coastline, has left mangroves denuded of leaves and stems, leaving roots coated in a bitumen-like substance sometime 1cm or more thick. The mangroves are spawning for fish nurseries for juvenile fish and the extensive impacting fish life cycle. This also has the further effect releasing carbon in the atmosphere for a second time as mentioned in the first chapter.

¹⁶⁷ Gold E. Et al. Essentials of Canadian Laws Series: Maritime Law, 2003, p. 715.

Recommendation

The author would like to put forward few recommendations on how offshore platforms can operate at a higher and safer standard to create thus less threat of pollution. The first recommendation States would cooperate to make stronger uniform regulations for the threat of marine pollution from offshore drilling activities. Normally there is no provision when it comes to what extent, but State should cooperate *bona fide*. Such a state of affairs allows individual States wide discretionary powers in their legislative obligations in an area that traditionally has always been under their direct control. This though could work for the benefit of States that are in imminent dangers of marine pollution. Belize is not a party to OPRC which one of the Convention that deals directly with offshore drilling activities this would be the first step to stronger regulation.

Secondly, since marine pollution usually affects a region, the States should have regional convention that deal with pollution from offshore activities. A good example of these types of convention is the Helinski and Baltic Convention. In the case of Belize there should be a regional Convention that assists Caribbean country to protect against pollution from offshore drilling activities.

Thirdly, it would be monitored for any marine pollution activity. Since when it comes to the benefit of blue carbon there is a double effect mentioned in chapter one. Through co-operation they should be able to monitor activities by using the satellite for marine pollution. They should be able to create advanced equipment to detect pollution since its has a costly effect on the environment and their economic benefits.

Fourthly, it would be capacity building for the offshore industry is being driven by the developed countries they would be the ones with technical expertise. Such expertise should be used to assist the developing countries in their offshore industry. In the area of sustaining the environment they should produce the expertise as well as training for developing countries to cooperate with the exigencies of the industry; and the prevention of marine pollution.

Fifthly, as discussed in this paper, the harness of oil and gas from offshore platform has a double effect of the ocean atmosphere and if not mitigated. The era of harnessing cleaner energy such

as: solar, thermal, and wind should be venturing into on an international level. These initiatives should be taken since pollution has a transboundaries effect.

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