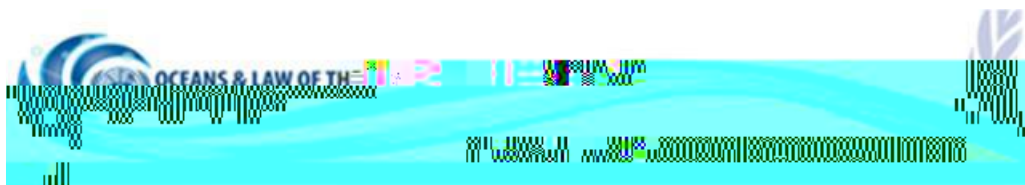


Protection of Marine Environment under the Law of the Sea

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DISCLAIMER

The views expressed herein are those of the author and do not necessarily reflect the views of the Government of the Union of Myanmar, the United Nations, the Nippon Foundation of Japan, or the World Maritime University in Malmo, Sweden.

ABSTRACT

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LIST OF ACRONYMS

AES International Convention on the Control of Harmful Anti-fouling Systems in Ships

ASEAN	Association of Southeast Asian Nations
BMW	International Convention for the Control and Management of Ships Ballast Water and Sediments, 2004
CLC	International Convention on Civil Liability for Oil Pollution Damage, 1969
EEDI	Energy Efficiency Design Index
EEOI	Energy Efficiency Operational Indicator
EEZ	Exclusive Economic Zone
FUND	International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971
GESAMP	Group of Experts on the Scientific Aspects of Marine Environmental Protection
IAPP	International Air Pollution Prevention
IEE	International Energy Efficiency
IMO	International Maritime Organization
LBSMP	Land Based Sources of Marine Pollution
MARPOL	International Convention for the Prevention of Pollution from Ships 1973/78
MPA	Myanmar Port Authority
NCEA	National Commission for Environmental Affairs
NIC	National Incident Commander
Nox	Nitrogen Oxides
OILPOL	International Convention for Prevention of Marine Pollution by Oil, 1954
	iv
OPA	Oil Pollution Act
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation 1990

OSLO	Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
POP	Persistent Organic Pollutants
SDR	Special Drawing Rights
SEEMP	Energy Efficiency Management Plan
Sox	Sulfur Oxides
UNCLOS	United Nations Convention on the Law of the Sea 1982
UNESCO	United Nations Educational, Scientific and Cultural Organization
YPIC	Yangon Ports Incident Commander

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INTRODUCTION

Throughout history, the seas have served mankind as a medium of communication, trade and livelihood. But, regrettably, due to its vastness, mankind has over the

pollution has

Inter-governmental Oceanographic

Pollution (GESAMP)³, as;

the marine environment including estuaries, which result 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 o

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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.⁵

In this definition, marine pollution is caused by human activities, either by

legitim -sea mining and offshore exploration activities. Shipping, waste from land and fishing can all be sources that bring harm to the marine environment.⁶

the 1996 Protocol to the London Dumping Convention, 1972, which states;

activity, of wastes or other matter into the sea which results or is likely to result in such deleterious effects as harm to living resources and marine ecosystems, hazards to human health, hindrance to marine activities, including

³GESAMP-G.J. Timagenis, *International Control of Marine Pollution* (Dobbs Ferry, NY, Oceana Publications, 1980), p. 24.

⁴R.R. Churchill and A.V Lowe, *The Law of the Sea* 3rd Edition, 1999, Jurist publishing, Manchester University Press, p. 328.

⁵*United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 3, (entry into force 1

⁶ -source Pollution and Its

The rapid advances in technology and development with their ever increasing demand for energy have spurred countries to search for new sources of energy including new reservoirs of oil and gas, both on land and at sea. Needless to say, such activities, especially offshore oil and gas exploration and extraction, are another major contributor to marine pollution. Despite these harmful practices, the world has for many decades past been aware of the need to protect the marine environment from pollution and preserve its resources for the good of future generations.

The legal framework of international law has been created and developed to control and prevent marine pollution. The international maritime law is convention based and stretches from public international law to private international law covering the regulatory law in between.¹²

In the 1970s and the 1980s, treaties regulating marine pollution were increasingly concluded. The International Maritime Organization has developed a number of global legal frameworks related to shipping safety and marine environment in order to

Oil, garbage, sewage and harmful chemicals discharged into the sea are the sources of marine pollution. Apart from polluting the sea they also cause the degradation of the ecological system and are a potential risk to human health. The global demand for petroleum has resulted in an incremental rise in the numbers and size of tankers bringing with it the potential for a corresponding increase in the number of accidental oil spills and associated impacts on the marine environment.

Oil pollution of the seas was recognized as a problem in the first half of the 20th century and various countries introduced national regulations to control discharges of oil within their territorial waters. In 1954, the United Kingdom organized a conference on oil pollution which resulted in the adoption of the International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL), 1954.

recorded up to that exposed the deficiencies in the existing OILPOL for providing compensation following accidents time at sea.¹³ Thus, the IMO Assembly decided in 1969 to convene an international conference in 1973, adopting the International Convention for the Prevention from Ships (MARPOL), for placing restraints in the contamination of the sea, land and air by ships.¹⁴

Once a pollutant occurs it spreads over the oceans, waters and rivers adjacent to neighbouring countries. Therefore effective legislation must be an act in the formulation of domestic regulations for marine pollution, the marine perspectives in regional treaties and international conventions pertaining to marine pollution problems should be taken into account. Particularly noteworthy in this regard, are the many comprehensive international conventions providing uniform standards to control worldwide marine pollution.

In this respect it should be borne in mind that marine pollution has no boundaries. The MARPOL convention is the main International Instrument regulating vessel source pollution. This convention covers not only accidental and operational oil pollution but also pollution by chemicals, harmful substances carried in packaged form, sewage, garbage and air pollution.

¹³ <http://www.imo.org/en/KnowledgeCentre/ReferencesAndArchives/HistoryofMARPOL/Documents/MARPOL%2073/78%20Brief%20History%20%20List%20of%20amendments%20and%20how%20to%20find%20them.htm>

2012, the Environmental Conservation Rule, 2017 and the Myanmar Port Authority Law 2015, the Inland Water Transport Law 2017.

These National Laws will be critically examined and their inadequacies with regard to protecting the marine environment identified and analyzed.

A review of other related literature such as the writing of scholars, books and documents will also be carried out.

1.3 Structure

This thesis is structured in two parts with each part comprising of two chapters and each chapter composed of two sections. An overview will be made in the first chapter

of marine pollution resulting from human activities is recognized as a matter that has to be addressed globally.

Marine pollution refers to the introduction of substances by humans into the marine environment, resulting in harm to living resources, presenting hazards to human health, downgrading the quality of seawater and hindering marine activities such as fishing and swimming.¹⁷ Pollution of the marine environment is a concept comprising two aspects: prevention of marine pollution and protection of marine living resources. Virtually all countries have, to varying degrees, already encountered the problem of pollution and are trying to solve it on a national level. However, no nation, no matter how efficiently it works in this direction, can consider itself safe as long as there is a lack of an effective global solution to the problem of environmental protection in areas which are used by all states.¹⁸

Researchers have indentified that the main sources of marine pollution are from land based sources, vessel based sources, waste dumping at sea, offshore oil and mineral exploitation activities and pollution from or through the atmosphere. Since the effective prohibition of marine pollution resulting from human activities is a very important matter, it is essential that countries make every effort to reduce pollutants causing marine pollution by enacting and enforcing relevant legislation based on international law.

Chapter 1

Sources of Marine Pollution

The so
as the types of human activity. In the first place, they can be divided into two categories: Land based and Sea based sources. They can also be classified according to the type of human activity as disposal of domestic sewage and industrial and agricultural wastes, deliberate and operated discharge of shipboard pollutants, interference with the marine environment resulting from the exploration and

¹⁷C R Nichols and R G Williams, Encyclopedia of Marine Scien (Facts on File, Inc. New York), 2009, p.360.

¹⁸ E P, Andreyev

zones caused by discharges from coastal establishments or other sources situated on land or artificial structures.²² Accordingly land based marine pollution has a national source since it arises from an area under the sovereignty of an individual State.²³

The threat of land based pollution to the marine environment is a serious one since it mainly affects coastal waters, which are sites of high biological productivity.²⁴ In other words, marine pollution from land based sources means pollution caused by discharge from land reaching the sea which are waterborne, airborne or directly from the coast including industrial outfalls and pipelines. Contaminants of land based sources are of various kinds, for example sewage, or ineffective sewage treatment, persistent organic pollutants (POPs), radioactive substances, heavy metals, oil nutrients, sediment mobilization, litter plastics and physical alterations including waste from landfills sited near coastal areas, storm water runoff, ship-building yards, and natural disasters and storms.²⁵

Land based marine pollution arises from diversified human activities from both coastal areas and further inland. The activities include the daily life of humans, agricultural, industrial production as well as military activities. All of them are necessary and unavoidable for the operation of society.²⁶ Land based pollution also includes garbage and other solid debris, especially plastics, notably polyethylene and polypropylene.

Plastics af1 0 0 153.58 .0.000008874 0 595.5 841.75 reW*nBTo5c(fro)-20(m)7()-41(1)0()] TJdills

Other International instruments have defined the concept of LBSMP, along with pollution and marine pollution. The Montreal Guidelines³³, for example, defines land based source as follows:

- (1) Municipal industrial or agricultural sources, both fixed and mobile, on land, discharges from which reach the marine environment, in particular: from the coast, including from outfalls discharging directly into the marine environment and through run-off; and through rivers, canals, or other water-courses, including underground water, ground water courses; and via the atmosphere.
- (2) Sources of marine pollution from activities conducted on offshore fixed or mobile facilities within the limits of national jurisdiction, save to the extent that these sources are governed by appropriate international agreement.³⁴

A very similar definition can be found in Article 2 paragraph 2 of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 as follows: the Pollution from land based sources means pollution of the sea by point or diffuse inputs from all sources on land reaching the sea, waterborne, airborne or directly from the coast. It includes pollution from any deliberate disposal under the sea bed with

Under the terms of the international and regional agreements, the parties are required to prevent and eliminate pollution from land based sources, including accidents. Therefore, States are required to set out provisions relating to the prevention of marine pollution from land based sources at global, regional and national levels.

Pollution from Sea Based Activities

Marine pollution can be caused by sea based activities. Pollution from sea based

the international sea bed.³⁵

Kuwait Conventions are currently under elaboration to lay down more provisions. It may also be noted that under the Canada- Denmark Agreement of 1983 the parties undertake to take measures to ensure that offshore installations are designed, constructed, placed, equipped, marked, operated and maintained in such a manner that the risk of pollution of the marine environment is minimised. The parties must also notify each other, and if necessary consult, over the initiation of offshore operations which may create significant risk of pollution.

UNCLOS establishes a basic framework of general commitments with regard to this source. National legislation and regional treaties are more effectual in controlling this source of marine pollution. There is an increasing need to regulate sea bed activities in the Area in order to protect the environment there. The role of the International Sea bed Authority is increasingly important.⁴¹

Paragraph 2. Other Sources Pollutants

Dumping at Sea

Dumping includes not only nuclear waste disposal but also industrial and domestic

structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, aircraft, platforms or structures;

- (ii) placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Convention.

Dumping had been a popular way of disposing of waste resulting from land based activities. Such wastes include radioactive matter, military materials including atomic weapons and explosives, dredged materials, sewage, sludge and industrial waste.⁴² At the global level, dumping is regulated

results in acidification of the ocean; while the third contributes to global warming which brings results of rising the temperature of the ocean.⁴⁶

All of them harm the marine environment. However, pollution transported via the atmosphere may not, if at all, affect the marine environment of the State on whose land the sources are located.⁴⁷ One of the largest sources of atmospheric pollution of the marine environment is now carbon dioxide released from human activities including the burning of fossil fuels, industrial processes and land use change. The oceans absorb around one-third of the carbon dioxide produced by human activities, and this gives rise to the chemical process known as ocean acidification.⁴⁸

Other threats are air emissions from planes which are true atmospheric sources of marine pollution. Also identifiable in this category is nuclear weapon testing. The fallout of radioactive particles from the atmosphere threatens the flora and fauna as well.

Section B. Oil and Vessel Sources as Major Pollutants of the Marine Environment

Paragraph 1. Oil Pollution

Oil pollution is a very large threat to the ocean and its inhabitants. It is a sea based pollutant which is the probably worst of the pollutants. Oil in the marine environment comes from a variety of sources. Some of the main causes are oil spills, oil in runoff, and even natural seeping of oil into the ocean due to the breakage of oil tankers (oil ships), oil pipe leakage, drilling activities, human transport or recreational activities, unskilled manpower, failing to check failures, natural causes beyond human control, operational oil spills, cleaning of tanks and runoffs from land pollution.⁴⁹

oil, covered or so

tanks for carrying oil.⁵⁰ Crude oil is oil in the natural state or unrefined oil.⁵¹

⁴⁶ UNEP; Legal Analysis of International Conventions for Prevention of Vessels-Source Marine Pollution; 2013, p. 9.

⁴⁷ Nan, Meng Qing, - , 1st Edition, Graham & Trotman Limited, London, UK, 1987, p.173.

⁴⁸ -Bas p.16.

⁴⁹ <https://www.megaessays.com/viewpaper/1049.htm>.

⁵⁰ Hamby, th Edition, 1991, p.858.

commonly used anti-fouling paint, tributyltin, has also caused deformations in oysters and sex changes in whelks, immune response, neurotoxic and genetic effects in other marine species.

Accidental pollution

Accidental pollution is unintentional and it arises due to accidents at sea. This happens when ships are involved in accidents for structural failures, grounding, and collisions and to a lesser extent explosions, breakdowns, fire and ramming.⁶⁵ The causes may be faults of the ship such as physical failure or unseaworthiness, wrongful operation, or force majeure. Furthermore, ship wrecks may have the potential to affect adversely not only the safety of lives, goods and property at sea but also the marine environment.

Accidental pollution is well known due to many notorious oil tanker spills starting

day to day shipping operations may be the worst, because it is steady and occurs everywhere.⁶⁸

It should, however, be noted that pollution caused by ships is relatively less when compared with land based marine pollution.

Chapter 2

International Legal Framework in Relation to Prevention of Marine Pollution

The Law of the Sea provides for the regulation, management and governance of the ocean spaces that cover over two-⁷³ The United Nations Convention entered into force on the 16 November 1994. The Law of the Sea Convention covers all oceans, irrespective of any national jurisdiction, and contains over 300 Articles and 9 Annexes. Part XII of the United Nations Convention on the Law of the Sea (UNCLOS), 1982, contains 11 Sections and 46 Articles that set out to provide a general and comprehensive account of the marine environment.

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) requires States to pursue two main environmental objectives: to prevent, reduce and control marine pollution, and to conserve and manage marine living resources. For both objectives, the 1982 United Nations Convention on the Law of the Sea (UNCLOS) establishes rules on information, scientific research, monitoring, environmental assessment, enforcement and liability.⁷⁴ This convention includes a number of provisions to protect the marine environment.⁷⁵ States have sovereign right to exploit their natural resources pursuant to their environment policies and in accordance with their duty to protect and preserve the marine environment.⁷⁶ States shall take,

consent of the coastal State. National laws and regulations shall be no less effective in preventing, reducing and controlling such pollution than the global rules and standards.⁹² In relation to enforcement of laws and regulations with respect to pollution by dumping, this shall be carried out by the coastal State within its territorial sea, economic zone or continental shelf.⁹³ With regard to vessels flying its flag or vessels or aircraft of its registry, the flag State is required to enforce laws and international rules to prevent pollution by dumping.⁹⁴ Concerning acts of loading of wastes or other matter occurring within its territory or at its offshore terminals, any State shall p4(i)7(t)7(s)4873z1 er occurredumpesre95(a)7(nd)-20()] TJE6Qq0.000008E6Qp7(i)7(on

enforcement adopt laws and regulations which conform to and give effect to generally accepted international rules and standards.¹⁰⁰

The foresaid international rules and standards should include *inter alia* the requirement for prompt notification to coastal States, whose coastlines or related interests may be affected by incidents, including maritime casualties which involve discharge or probability of discharge.¹⁰¹ In this respect, Article 221 provides that in taking measures to avoid pollution arising from maritime casualties, States have the right under international law to take and enforce such measures beyond their territorial sea so as to protect their coastline or related interest.¹⁰²

nt of navigation, or other occurrence on board a vessels or external to its resulting in material damage or imminent threat of material damage to a vessel or cargo.¹⁰³

Pollution from or through the atmosphere

According to Article 212 of the United Nations Convention on the Law of the Sea 1982, States shall take the measures necessary to prevent, reduce and control atmospheric pollution. These measures shall include the adoption of laws and regulations applicable to the airspace under the sovereignty of States parties and to vessels flying their flag or vessels or aircraft of their registry.¹⁰⁴ Certain regional sea treaties also provide that -13(t)7()-20(-13(t)7()-20(-f/-124(a)7(nd)-20()-124(t)7(o)-20()] TJETQq0.

More than other aspects of the LOSC, part XII has been prioritized to deal with the issue of marine pollution where the rights and obligations of states (coastal, flag and port states) regarding the preservation

Flag States are also required to promptly inform the requesting State and the competent international organization of the action taken and its outcome. Such information shall be available to all States.¹¹²

In addition, the Article recommends that States include in their laws and regulations, penalties for violations by ships flying their flag and those penalties should be severe enough to act as a deterrent against further violations.

Enforcement by Port States

The United Nations Convention on the Law of the Sea has introduced a new mode of regulation of vessel source pollution by port States, under which it is provided that when a vessel is voluntarily within a port or at an off-shore terminal of a State, that State may undertake investigations and, where the evidence so warrants, institute proceedings in respect of any discharge from that vessel outside the internal waters, territorial sea or exclusive economic zone of that State in violation of applicable international rules and standards established through the competent international organization or general diplomatic conference.¹¹³

However it limits the jurisdiction of the port State to undertake such proceeding when the violation occurs within the internal waters, territorial sea or exclusive economic zone of another State by providing that such proceedings may be instituted only upon request by that State, the flag State or any State that is damaged or is likely to be damaged by the discharge violation. Also, it may institute proceedings when the violation has caused or is likely to cause pollution in its own internal waters, territorial sea or exclusive economic zone. Port State jurisdiction is further qualified by Ar

request, to the flag State or the coastal State and that any proceedings instituted by it, may, subject to Section (7) (b) be suspended at the request of the coastal State when the violation has occurred within its internal waters, territorial sea or exclusive economic zone, and in that event, the evidence and records of the case together with any bond shall be transmitted by the port State to the coastal State. Such transmittal precludes the continuation of proceedings in the port State.

Enforcement by coastal States

Article 220 provides enforcement jurisdiction of coastal States. When a vessel is voluntarily within a port or at an off-shore terminal of a State that State, may institute proceedings in respect of any violation of its laws and regulations of that concerning vessels source pollution when the violation has occurred within the territorial sea or the exclusive economic zone of that State.¹¹⁴

Where there are clear grounds for believing that a vessel navigating in the territorial sea of a State has, during its passage therein, violated laws and regulations of that State relating to vessel source pollution, that State may undertake physical inspection of the vessel relating to the violation and may institute proceedings, including detention of the vessel.¹¹⁵

Where there are clear grounds for believing that a vessel navigating in the EEZ or the territorial sea of a State has, in the EEZ, committed a violation of applicable international rules and standards for the regulation of vessel source pollution, or related laws and regulations of that State, it may require the vessel to give relevant information required to establish whether a violation has occurred.¹¹⁶

The coastal State is allowed to undertake physical inspection of vessels where there are clear grounds for believing that a vessel navigating in the EEZ or the territorial sea of a State has, in the EEZ committed a violation referred to in Article 220 (3) resulting in a substantial discharge causing or threatening significant pollution of the marine environment and the vessel has refused to give information or if the information supplied by the vessel is manifestly at variance with the evident factual situation and if the circumstances of the case justify such inspection.¹¹⁷

¹¹⁴ Ibid, UNCLOS, Article 220 (1)

¹¹⁵ Ibid, UNCLOS, Article 220 (2)

Where there is clear objective evidence that a vessel navigating in the EEZ or the territorial sea of a State has, in the EEZ committed a violation referred to in paragraph 3 resulting in a discharge causing major damage or threat of major damage to the coastline or related interests of the coastal state, or to any resources of its territorial sea or EEZ, that State may institute proceedings, including detention of the vessels, in accordance with its Laws.¹¹⁸

However, whenever appropriate procedures have been established and compliance with requirements for bonding or other financial security has occurred, the coastal State, shall allow the vessel to proceed.

The above analysis of the United Nations Convention on the Law of the Sea shows that it has provided the international community with a comprehensive legal framework for the prevention, reduction and control of marine pollution and for the conservation and management of marine living resources.

Under Article 220 of the LOSC, a coastal State is allowed to institute proceedings regarding vessel source pollution against a vessel which has committed a violation

date on which not less than 15 States, which constitute not less than fifty per cent of the world merchant shipping gross tonnage, have become parties to it. It was experienced that the progressive rate of signatory States responded very slow after open for signature and its signal indicated need to speed up the ratifying process.

The 1973 MARPOL Convention includes regulations aimed at preventing and minimizing pollution from ships-both accidental pollution and that from routine operations and currently includes six technical Annexes:

- Annex I Prevention of pollution by oil from
(entered into force 2 October 1983)
- Annex II Control of pollution by noxious liquid substances in packaged
from (entered into force on 6 April 1987)
- Annex III Prevention of pollution by harmful substances in packaged
from (entered into force on 1 July 1992)
- Annex IV Prevention of pollution by sewage from ships
(entered into force on 27 September 2003)
- Annex V Prevention of pollution by garbage from ships
(entered into force on 31 December 1988)
- Annex VI Prevention of Air Pollution from Ships
(entered into force on 19 May 2005)

must be adequate and equally severe irrespective of where the violations.¹²⁴ National legislation for implementing MARPOL should reflect these requirements, and a marine administration is required to fulfil these obligations.¹²⁵

As far as oil cargoes are concerned, Annex I starts with the definition of oil as petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products, however it does not include petrochemicals which are subject to the provisions of Annex II. In

are specifically characterized by precise definition respectively. In terms of

relation to its oceanographically and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required.¹²⁶ For the purpose of Annex I, the recognized special areas are Mediterranean Sea, Baltic Sea, Black Sea, Red Sea, Gulfs area, Gulf of Aden, Antarctica, North West European waters, Oman area of the Arabian Sea and Southern South African waters.

Annex III contains regulations for the prevention of pollution by harmful substances in packaged form. It includes standards concerning packaging, marking, labelling, documentation, stowage and quantity "Substances" include any substance which, if introduced into the sea, is 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.¹²⁷

In Annex VI there are regulations relating to sewage which apply to ships undertaking international voyages, which are 400 gross tonnages or above, or that are certified to carry more than 15 persons. It requires these ships to

ship repair yards, bun

International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (OILPOL 54) amended in 1962, 1969 and 1971. OILPOL was adopted in London in 1954 and was a significant achievement at that time. It was a significant exclusively designed to deal with the oil pollution problem. It prohibits the international operational discharge of oil and oily mixtures by certain ships in specified areas of the oceans.¹³⁶

which may affect the marine environment or the coastline and related interests of States.¹⁴⁴

The OPRC-HNS Protocol applies the rules of the OPRC Convention to pollution incidents involving hazardous and noxious substances, and entered into force in 2007.¹⁴⁵

The OPRC (HNS) Protocol aims to establish national systems for preparedness and response and to provide a global framework for

in major harmful consequences.¹⁴⁸ However, no measures shall be taken against any warship or other ship owned or operated by a State.¹⁴⁹

to in this provision means a collision of ships, stranding or other incident of navigation, or other occurrence on board a ship or external to it resulting in material damage or imminent threat of material damage to a ship or cargo.¹⁵⁰ The coastal State cannot exercise the right of intervention in the case of operational pollution or dumping at sea.

However, the coastal States is allowed to take only such action as is necessary and after due consultation with appropriate interesting States, in particular, the flag State or States of the ship or ships involved and the ship owners or cargo owners involved, and also independent experts appointed for this purpose where circumstances permit. A coastal State that takes excessive actions beyond permissions under the convention will be liable to pay compensation for any damage caused by such actions.¹⁵¹ There is a provision provided for the settlement of disputes arising in connection with the application of the convention. The convention applies to all seagoing vessels except warships or other vessels owned or operated by a State and used on Government or non-commercial service.

The scope of the 1969 High Seas Intervention Convention was further extended by the 1973 Protocol.¹⁵² The 1969 Intervention convention is applicable in the event of maritime casualties involving pollution by oil.¹⁵³ The convention came into force in 1975. In view of the increasing quantity of other substances, mainly chemical, carried by ships and some of those would cause serious hazards if released to the marine environment; the 1969 Brussels Conference recognized the need to extend the convention to cover substances other than oil. The 1973 Protocol entered into force in 1983 and has been amended subsequently to update the list of substances attached to it.

¹⁴⁸ The Intervention Convention, Article 1 (1)

¹⁴⁹ Ibid, The Intervention Convention, Article I (2)

¹⁵⁰ Ibid, Article II (1)

¹⁵¹ Ibid, Article VI

¹⁵² Protocol Relating to Intervention on the High Seas in Cases of Pollution by Substances Other than Oil. 1313 UNTS p.4. Entered into force 30 March 1983.

¹⁵³ Ibid, The Intervention Convention, Article I (1)

does not find those provisions. It evaluates the precautionary principle and polluter pays principle. In addition, the contracting parties have the obligation to prohibit the dumping of any wastes or other matter that is not listed in Annex I of the 1996 London Protocol requires a permit.¹⁶⁰ In the issuance of permits, the contracting parties shall adopt administrative or legislative measures comply with the provisions of Annex 2.

Dumping of waste or other matter on this reverse list requires a permit. Parties to the product are further obligated to adopt measures to ensure that the issuance of permits and permit condition for the dumping of reverse list include dredged material, sewage sludge; industrial fish processing wastes; vessels and offshore platforms of other man-made structures at sea, inert, inorganic geological material; organic material of natural origin; and bulky items including iron, steel, concrete and similar materials for which the concern is physical impact, and limited to those circumstances where such wastes are generated at locations with no land disposal alternatives.¹⁶¹

This London Protocol reflects a more modern and comprehensive agreement on the

Invasive aquatic species are one of the four greatest threats to the can cause extremely severe environmental, economic and public health impacts. Those species are generally spreading by means of ballast water operation which is generally carried on ships for trims and stability purpose. Surprisingly, an approximate amount of 10 billion tons ballast water is transferred by worldwide shipping from one place to another each year. Where the new is outside of their natural geographic range, the species which has been transferred is commonly known as an alien species, alternative terms are non-native or non- indigenous. If the environmental conditions of the new geographic area are suitable, those alien species can not only survive, but also establish and spread, in many cases causing, or even potentially to causing, harm to the local environment, economy, or human health. Such species are generally called

¹⁶³ Unlike oil pollutions; the impacts of invasive marine species are most often irreversible.¹⁶⁴

control trim, list, draught, stability or stress of the ship. ¹⁶⁵ General obligation state for parties to undertake to give full and complete effect to the provisions of the Convention and the Annex thereto in order to prevent, minimise and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control

global prohibition on the application of organotin compounds which act as biocides in anti-fouling systems on ships by 1 January 2003, and a complete prohibition by 1 January 2008. In October 2001, this instrument was adopted as International Convention on the C

Anti-fouling systems to be prohibited or controlled are listed in an annex (Annex I) to the Convention, which will be updated as and when necessary. Annex I also states that all ship shall not apply or re-apply organotins compounds which act a

irresistible character; was wholly caused by an act or omission by a third party with intent to cause damage; or war wholly caused by the negligence of any government or other authority responsible for the maintenance of navigational aids.¹⁷⁹

Under the 1992 CLC, claims for compensation are to be made against the registered

owner of the oil cargo

shipowner can obtain certificates to both the 1969 and 1992 CLC, even when the ship is registered in a country which has not yet ratified the 1992 Protocol. It is particularly important because the difficulties may be encountered by a ship which has only a 1969 CLC to trade to a country which has ratified the 1992 Protocol since it established higher limits of liability.

The 2000 amendments adopted on 18 October 2000 and entered into force on 1 November 2003. These amendments raised the compensation limits by 50 percent compared to the limits set in the 1992 Protocol, as follows:¹⁸³

- (a) For a ship not exceeding 5,000 gross tonnage, liability is limited to 4.51 million SDR (US\$ 5.78 million)
- (b) For a ship 5,000 to 140,000 gross tonnage: liability is limited to 4.51 million SDR plus 631 SDR for each additional gross tonne over 5,000;
- (c) For a ship over 140,000 gross tonnage. Liability is limited to 89.77 million SDR.

The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971

The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage was adopted at a Conference held in Brussels on 18 December 1971 and entered into force on 16 October 1978. It is supplementary to the Civil Liability Convention. The main reason for creating the Fund Convention was to balance the contributions for the compensation of oil pollution damage between the owners of the ships and the owners of the cargo and the oil industry.

The 1992 Fund pays compensation when:

- (i)

paid under the existing CLC and FUND Convention. The Supplementary Fund will apply to damage in the territory, including the territorial sea, of a Contracting State and in the exclusive economic zone of a Contracting State.

International Convention on the Removal of Wrecks, 2007

The International Convention on the Removal of Wrecks was adopted on 18 May 2007, and entered into force on 14 April 2015.¹⁹⁰ The convention places strict liability on owners for locating, making and removing wrecks deemed to be a hazard and makes State Certification of insurance, or other than from of financial security for such liability, compulsory for ship of 300gt and above. It also provides States parties with a right of direct action against insurers, and shipwrecks may have the potential to affect adversely not only the safety of lives, goods and property at sea but also the marine environment includes an optional clause enabling State parties to apply certain provisions to their territory including their territory sea.¹⁹¹

The problems caused to coastal States and shipping in general by abandoned wrecks are three-fold first and depending on its location, a wreck may constitute a hazard to navigation potentially endangering other vessels and their crews, second and of equal concern, depending on the nature of the cargo, is the potential for a wreck to cause substantial damage to the marine and coastal environments, and third in an age where goods and service are becoming increasingly expensive, is the issue of the costs involved in the marking and removed of hazardous wrecks. The convention attempts to resolve all of these and other, related, issues.

The convention provides a legal basis for States parties to remove, or have removed, wrecks that pose a danger or impediment to navigation or that may be expected to result or damage to the coastline or related interests of one or more States. The convention also applies to a ship that is about or may reasonably be expected, to sink or to stand, where effective measures to assist the ship or any property in danger are not already being taken.

¹⁹⁰ International Convention on the Removal of Wreck, 2007, entered into force on 14 April 2015. See <http://www.imo.org/en/About/conventions/listofconventions/pages/nairobi-international-convention-on-the-removal-of-wrecks.aspx>

¹⁹¹ The WRECK Convention, Article 3

marine areas include overfishing, coastal development, illegal oil dumping and the use of destructive fishing practices such as dynamite and cyanide. Despite the protected areas and there is little capacity to conserve and manage resources. The Myanmar Government has expressed its commitment, through international convention, to put 10% of its marine areas under protection by 2020; however a range of factors including the lack of biological and socio-economic data and a lack of financial and technical resources severely constrain the ability of the Government and other actors to meet this target. Overfishing, including by foreign vessels, is contributing to the declining livelihoods of fishing villages.¹⁹⁸

Chapter 1

Causes of Marine Pollution

Marine pollution causes serious threat for developing country of Myanmar. The marine pollution in Myanmar caused by industry or agriculture has been minimal at present due to low level of industrialization, relatively small amount of chemical used in agriculture. Major marine sources of pollution include land based sources, and sea based source.

Section A. Land based Sources

Land based activities, which contribute to the degradation of the marine environment, can be conveniently categorized as household activities, industrial activities, agricultural activities and urban development of land. Myanmar is encouraging Investments for Industrial and other sea based and

urbanization and discharge of municipal waste are continuously polluting the river system. Moreover, the numerous rivers and their tributaries that crisscross the country carry pollutants of the whole catchment area including upstream areas. The Ayeyarwaddy River is one vital artery waterway of Myanmar and is navigable throughout the year. Many industrial zones are known to be situated along the banks of the Ayeyarwaddy River. Among these industries, some industrial plants in one way or other directly discharge their industrial effluents without any waste treatment into the Ayeyarwaddy River. It is obvious that the quality of this waterway will eventually become affected due to the extended discharge. Yangon with a population of about 5-millions discharge its sewage and industrial waste into the Yangon River, which is a tributary of the Ayeyarwaddy. A similar condition can be found in the river mouth of Thanlwin, which is about 50 miles south of Mawlamyaing, the third largest city with population of 700,000. The city of Patheingyi, which is the fourth largest city also discharge its waste into the Nga-Wun River, a tributary of Ayeyarwaddy.²⁰¹

and

Committee have delegated administrative functions under the authority of the Yangon Region and Mandalay Region governments and have other regional municipal organizations under regional government. They are responsible for municipal service delivery and public works (waste management, water supply, roads and bridges, parks and sports grounds, street lighting, funeral services, firefighting, etc.), city planning, urban land administration, tax collection (including business licensing and registration), public health, and urban development. Both the YCDC and MCDC are now managed by committees, chaired by the ministers of the Yangon and Mandalay Region governments that are partly elected by the public. These governing bodies are unique in that they allow for consolidated management of townships thirty-three for Yangon and seven for Mandalay.²⁰⁶

Among of Municipal organizations, Yangon City Development Committee has responsibilities on transportation, equipment, personnel and disposal of waste disposal and cleanup operation and permission for disposal of waste in oil spill response. In case of oil spill response, Yangon City Development Committee shall control for waste management, which will currently provide the man power, equipment and services to facilitate the ongoing shoreline cleanup effort. Specifically, Waste Management is transporting and disposing of materials collected by the various shoreline cleanup teams, and is responsible for a service area along the Yangon River, which is just south of Myanmar, Yangon region.²⁰⁷

Section B. Sea Based Sources

Whenever sea based sources of mariny tion a

Carriers and Ultra Large Carriers Oil Carriers. Hundred thousand of persisted oil will be carried on board. Shipping casualty can happen at any time due to collision, grounding, fire or explosion, mechanical or hull failure, influenced by weather phenomenon as well as by posing maritime security threats. It is foreseeable that not only seaports but also special economic zones would also bring multifaceted environmental problems that have to be borne by Myanmar people especially living around the coast.²¹¹

In connection with this port, there are two pipelines laid down from Myanmar to China; one is for gas and already in operation, another parallel oil pipeline in order for transporting to China. Myanmar- China oil pipelines is planned to carry 22 million tons of oil annually, according to China National Petroleum Corporation, which means that almost 2 million tons of persistent oil will be discharged at the port monthly and then it will be transported through the parallel pipeline. Early in 2015, at the end of February, the very first Very Large Crude Oil Carriers tanker carrying about 130,000 tons of crude oil has successfully berthed at the port and unloaded the cargo. In such a way that, 2015 onwards, Myanmar become as an Oil Receiver country in million tons per annum so as oil pollution risk is likely to be significant. The obvious and problematic issue is how to contend with if there were oil pollution occurrence in Myanmar. Ship-source pollution is a contemporary issue on an urgency call.²¹²

In Myanmar, Tendency of pollution by shipping transport and ship-port interface operations is inherently risky to the marine environment. Despite the fact, fortunately, there has been no major disastrous pollution incident recorded yet in any port of Myanmar other than that some minor incidents had already happened in Yangon river and off coast of Myanmar as illustrated in Fig.(1).²¹³

²¹¹Ko

²¹² Ibid.

²¹³Department of Marine Administration of Myanmar

There is no evidence left in the history that either a legal action has ever been taken against any polluters or a claimant has been attempted or rewarded from the myth that the polluter pays.²¹⁷ Record of oil spill accidents within Yangon area and the off the coast of Myanmar is summarized in Fig. (2).

No.	Date
-----	------

Leader Hainggyi spilled into the sea. It Japanese owners, was refloated and taken grounded on the reef near over by Myanma Five Diamond island of Star Line together with Hainggyi region during the said ship, liability Cyclone Nargis hit in was unquestionably Myanmar cyclone. It was diminished. abandoned by its owner, the Japan-based Eastern Car Liner company and handed over to Myanma Five Star Shipping Line

					Yangon river near Thilawa port. The coaster tanker capsized and drifted to river side and finally sank.
8.	August 2015	Aziza	Mun Aung Island ²²¹	27 tons of heavy fuel oil and 15 tons Diesel oil remaining on board after the ship was abandoned on the reef by its crew.	Bulker AZIZA, flag of St. Kitts and Nevis, stranded in the west coast of Myanmar. She bound Bangladesh and encountered engine trouble then stranded, on the reef of Mun Aung island.
9.	January 2016	Dong ThienPhu Silver	Near Yangon pilot station		

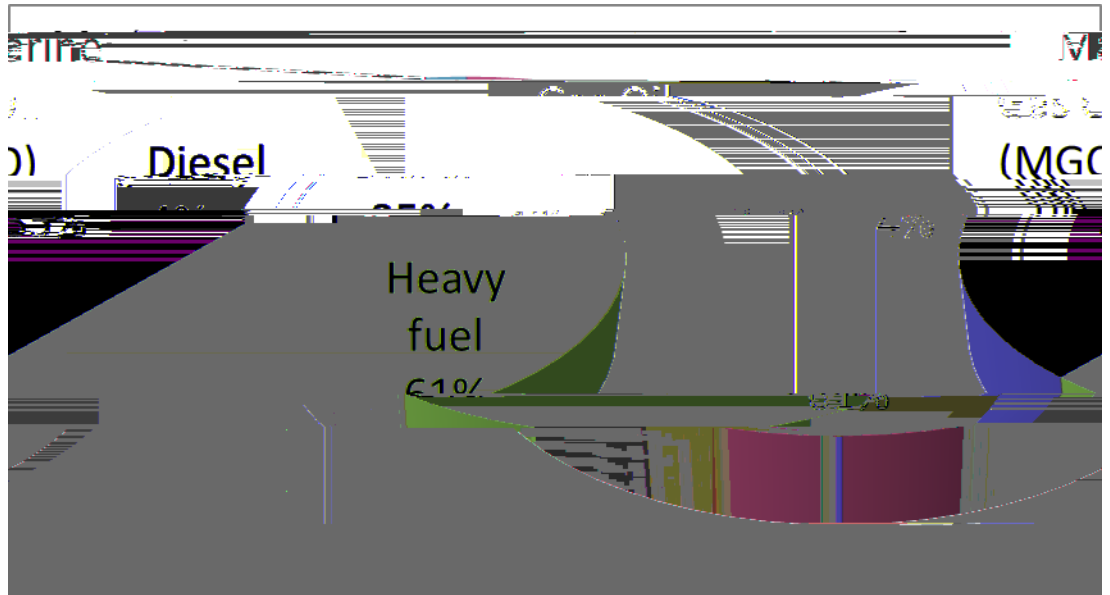


Fig (3) Types of oil spilled in Myanmar

Paragraph 2. Vessel Sources

Marine pollution in Myanmar, which can simply be defined as contamination of the marine with harmful or foreign materials, is categorized under water pollution because it constitutes the largest and the most crucial water body in all region of Myanmar. In case of marine transport in Myanmar, there might not be a clear-cut road, but problems in the form of pollution exist and persist. A substantial development of the Myanmar shipping industry can be expected, the steady increase of international trade in terms of value and volume. The development of ports, terminals and inland waterways, an improved information and communication infrastructure and the improved banking system will all add to this development. The newly formed Ship Associations can help the professionalization process. The number of vessels calling to Yangon Ports is more than 2500 per year and the amount of general cargo trade has developed more than double. Today container throughput has reached over 400 per cent which compared to that of 2006-2016. The international port facilities in Yangon are now up to 18. The rapid economic development will increase trade flows and waterborne transport, growth of international trade, development of infrastructure, growing manufacturing economy and abundance in natural resources.²²²

²²² Department of Myanmar Port Authority of Myanmar

On the other side, Myanmar has been faced the marine environmental impact by ship, but no record to collect data because of there is no sufficient research to make survey these issu

shipping legislation and focused on safe

should be rewritten the whole contents of the Act into a new law instead of several amendments being composed. Sighting from the legal framework for the protection of marine environment, nothing in the existing Merchant Shipping Law covers marine pollution essence but just focus on safety issues. The existing Merchant Shipping Law some have been revised and some still seriously need to be amended or revised. For that reason, the legislation process delay offers a room to hesitation issue whether marine pollution law should be added in Merchant Shipping Law or a new Marine Pollution Law should be separately promulgated. The majority of maritime nations prefer the latter pattern around the world.

The Inland Vessels Law

The Inland Steam Vessels Act was wholly revised and abrogated by the new Inland Vessels Law (IVL) which has been promulgated recently in the month of April, 2015. It can be observed that in the Chapter 6 of new IVL, the provisions for the protection of marine environment have been inserted in sections 33, 34 and 35. It is also notable that, in any case,

within the country but it neither goes beyond this limit to coastal water nor extends to sea.²²⁹ Understandably, the new Inland Vessels Law would not cover in case of marine pollution if it happens in Myanmar territorial water, EEZ or continental shelf.

The Myanmar Port Authority Law

The Ports Act, 1908, the Yangon Port Act, 1905 and the Out-ports Act were merged into a single volume after a major modification and renamed as Myanmar Port Authority Law. The Myanmar Port Authority Law has been promulgated since 9 April 2015 and in the meantime the Yangon Port Act and the Out ports Act were revoked. Moreover, the Myanmar Port Authority Law, section 23(b) assigns the authority to carry out the distribution of information and technology, taking precautionary measures not to cause oil spills from vessels, which carry petroleum, oil, chemical plying within the port boundary, or from oil test wells, oil wells and oil pipelines, or from collision and grounding of vessels. If an oil and chemical spill occurs, such authority shall arrange and carry out, in coordination with the experts, for

From the vantage point of offences and penalties, section 88 stipulates to sentence whomever if convicted under section 80, which is indicative having done to cause water pollution or destruction and loss of resources of the natural environment with of this punishment with less than twenty thousand US\$ is that would merit merely to clean up cost for 1 ton of oil spill. On the other hand, notably, there is no provision in the Myanmar Port Authority (MPA) Law that addresses the issue of contravention of the marine pollution regulations. In this regard, it would appear that the drafters did not have in contemplation to detect violations or any contravention of the operational discharge standards. This key point seems to be intentionally left a room for another legislature to fill the loophole.

Environmental related Laws in Myanmar

The environmental management pattern in Myanmar is, largely, sectoral with existing laws relating to environmental management being formulated and administered by the sectoral ministries and departments concerned. There are totalling over 60 laws, rules and regulations relating to environmental matters.²³¹

There have been a number of sectoral laws established that have environmental provisions in relation to the prevention of marine pollution and the protection and conservation of natural resources launched as listed in Fig.(5).

Legal Instrument	Objectives
The Water Power Act 1927	To prohibit pollution of public waters for obtaining energy and mining purpose
The Factories Act 1951	To control factories that involve with chemicals, particularly hazardous or toxic chemicals
The Public Health Law 1972	To carry out measures relating to environmental health, such as garbage disposal, use of water for

²³¹ Finnish Environment Institute (SYKE) & UNDP Mya

p.30.

	drinking and other purposes, radioactivity, protection of air from pollution, and food and drug safety.
The Territorial Sea and Maritime Zone Law 1977	To define and determine Myanmar territorial sea and maritime zones, contiguous zone, exclusive economic zone and continental shelf in respect of preservation and protection of marine environment, its resources and prevention of marine pollution.
The Law Relating to Aquaculture 1989; The Law Relating to the Fishing Rights of Foreign Fishing Vessels 1989; The Myanmar Marine Fisheries Law 1990; and The Freshwater Fisheries Law 1991	To provide for further development of fisheries,

and future generations. Environmental protection should always be the primary

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The formulating of Myanmar Agenda 21 was undertaken by the NCEA and completed in 1997. The main purpose of formulating the agenda is to provide a framework of programmes and action for achieving sustainable development in the country.²³⁴

- (d) prescribing environmental quality standards including standards on emissions, effluents, solid wastes, production procedures, processes and products for conservation and enhancement of environmental quality;
- (e) submitting proposals to the Committee for economic incentive mechanisms and terms and conditions which may not affect the environment or cause least environmental affects for sustainable development in addition to legal affairs and guidelines relating to environment;
- (f) facilitating for the settlement of environmental disputes and , if necessary, forming bodies to negotiate such disputes;
- (g) specifying categories and classes of hazardous wastes generated from the production and use of chemicals or other hazardous substances in carrying out industry, agriculture, mineral production, sanitation and other activities,
- (h) prescribing categories of hazardous substances that may affect significantly at present or in the long run on the environment;
- (i) promoting and carrying out the establishment of necessary factories and stations for the treatment of solid wastes, effluents and emissions which contain toxic and hazardous substances;
- (j) prescribing the terms and conditions relating to effluent treatment in industrial estates and other necessary places and buildings and emissions of machines, vehicles and mechanisms,
- (k) negotiating cooperating and implementing in respect of international, regional and bilateral agreements, instruments and programmes relating to matters of environment;
- (l) implementing the international, regional and bilateral agreements accepted by Myanmar for environmental conservation and enhancement of environmental quality in accord with the guidance adopted by the Union Government or the Committee,
- (m)causing to lay down and carry out a system of environmental impact assessment and social impact assessment as to whether or not a project or activity to be ug2 lay down an -291(of)-291(s)-6(ol)7(i)7(d)-291(w/F6 12 Tf1 0 0 1 143

mitigation and adaptation of global warming and climate change, combating desertification and management of non-depleting substances and management of other environmental matters;

- (o) managing to cause the polluter to compensate for environmental impact, cause to contribute fund by the organizations which obtain benefit from;
- (p) the natural environmental service system, cause to contribute a part of the benefit from the businesses which explore, trade and use the natural resources in environmental conservation works;
- (q) carrying out other functions and duties assigned by the Union Government relating to environmental conservation.²³⁸

Section 9 (b) requires that an event of environmental emergency the concerned department shall carry out necessary measures relating to the environmental emergency.

The Ministry may, with the approval of the Union Government and the Committee, stipulate the environmental quality standards such as suitable surface water quality standards in the usage in rivers, streams, canals, springs, marshes, swamps, lakes, reservoirs and other inland water sources of the public; water quality standards for coastal and estuarine areas; underground water quality standards; emissions standards; effluent standards; solid wastes standards; other environmental quality standards stipulated by the Union Government.²³⁹

The Ministry shall, under the guidance of the Committee, maintain a comprehensive monitoring system and implement by itself or in co-ordination with relevant Government departments and organizations in the following matters:

- (a) the use of agro-chemicals which cause to impact on the environmental significantly;
- (b) transport, storage, use, treatment and disposal of pollutants and hazardous substances in industries;
- (c) disposal of wastes come out from exploration, production and treatment of minerals, industrial mineral raw materials and gems;
- (d) carrying out waste disposal and sanitation works;
- (e) carrying out development and constructions;

²³⁸The Environmental Conservation Law, Article 7

(f) carrying out other necessary matters relating to environmental pollution.²⁴⁰

Section 14 of the Environmental Conservation Law provided that, a person causing a point source of pollution shall treat, emit, discharge and deposit the substances which cause pollution in the environment in accord with stipulated environmental quality standards.

The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an onsite facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods.²⁴¹

The Ministry may, with the approval of the Union Government, stipulate the categories of business; work-site or factory, workshop which may cause impact on the environmental quality that requires obtaining the prior permission.²⁴² The holder of the prior permission shall effect insurance according to the category of his business, work-site or factory, workshop for any accident that may cause impact on the environment, in accord with the existing law.²⁴³

In the context of offences and penalties under chapter XIII, section 32²⁴⁴ of the Environmental Conservation Law provides that any prohibition contained in the rules, notifications, orders, directives and procedures issued under this Law shall, on conviction, be punished with imprisonment for a term not less than one year and not more than five years and with a fine not exceeding one lakh rupees or any

March 2012. In addition, Environmental Conservation Rule was regulated On 5 June 2014 to determine environmental quality standard for any aror surbalsruralenl , sETQq0.000008874

Naypitaw City Hall. That is indicative of the status of Naypitaw as the administrative City of the Union of Myanmar.²⁴⁶

Yangon City Development Committee (YCDC) is the administrative body of Yangon, the largest city and former capital of Myanmar. It consists of 20 departments, with headquarters in the Yangon City Hall.²⁴⁷

The Yangon City Development Law was adopted on 8 October 2013 by Yangon Region Hluttaw, Law No. 6/2013. With regard to functions of the Committee, Section 11 sub-section (i) and (k) of the 2013 Yangon City Development Law provides that the Committee shall lay down the policy, give directions, supervise and carry out in respect of the following functions and duties:

- (i) conservation of environment and management of rubbish;
- (k) carrying out and directing the standard, specification and qualification of environment, including standard and specification of process and product, manufacturing methods of product, emission, effluent and solid waste for maintaining

discarded materials, dirty and loathe things in respect of conservation of environment and sanitation within the City boundary.²⁴⁸

Relating to distribution of water and cleaning of cesspit, Section 25 sub-section (g),

for each day with fine from a minimum of Kyats 10,000 to a maximum of Kyats 500,000 or with imprisonment for a term which may extend to 6 months.²⁵³

Whoever violates or fail to oblige the prohibitions included in orders issued by the committee under this law, shall, on conviction be punished with imprisonment for a term which may extend to 3 months or be punished with a fine from a minimum of Kyats 10,000 to a maximum of Kyats 300,000 or with both.²⁵⁴

Whoever has, on conviction, been punished under sections 70 continue to violate or fail to oblige prohibitions included in orders issued by the committee under this law, he shall be punished for each day with fine from a minimum of Ky Tf1 0 0 1 407.17 653.2 Tm0 ,

health effects. The State Government is conducting surveys with the help of WHO to find out how to treat the wastewater properly. The seventeen countries including Myanmar have reported about their own wastewater treatment systems and standards

the major violators of the regulations. The chair of Hlaing Tharyar Industrial Zone management committee, said that although they are routinely conducting inspections on water treatment, bad smells caused by wastewater are still prevalent and that the factories in the zone need systematic treatment technologies. Yangon City a Development Committee (YCDC) conducted the last citywide inspection on water treatment standards in 2012 in which only 39 factories were reported to have meet all the criteria. A total of 167 factories were found to be disposing wastewater in the designated area but failing to comply with all the rules and 3,054 factories were found to be disposing wastewater irresponsibly. The committee is also getting help from water experts and water treatment focused international companies to upgrade the water treatment technologies and practices of industries.

Paragraph 2. Ratified International Convention

The International Maritime Organization (IMO) which is the international

order for it to come into force. With regard to maritime conventions, in particular the MARPOL Convention, the Department of Marine Administration is the responsible authority, which has to deal with incorporating MARPOL into Myanmar domestic legislation.

published by the International Maritime Organization, as amended from time to time;

CHAPTER II

Objectives

3. The objectives of this law are as follows:

- (b) For the purpose of any provision of this Act relating to the discharge of oil, oily mixture, refuse, garbage, waste matter, plastics, marine pollutant in packaged form, noxious liquid substance or trade effluent from a ship, any floating craft other than a ship which is attached to a ship shall be treated under the Prevention of Pollution of the Sea Act as part of the ship.

CHAPTER III

Application

- 4. (a) Application and interpretation of Convention.
 - (1) Subject to the provisions of this Act, the Convention shall have effect in relation to-
 - (a) any Myanmar Ship, wherever it may be, and
 - (b) any other ship while it is in the Republic or its territorial waters or exclusive economic zone
 - (b) Unless the context indicates otherwise, a reference in the Convention-
 - (1) to a State Party shall be construed as, or as including, a reference to the Union, and any reference to a Party shall be construed accordingly;
 - (2) to the Administration Government or Department shall, in relation to a Myanmar ship, be construed as, or as including, a reference to the Department or any person acting on its authority.

- (5) prescribe, for any contravention thereof failure to comply therewith, penalties ranging from fines of a minimum of kyats 500,000 to a maximum of kyats 500,000, imprisonment ranging from a minimum of (2) years to a maximum of (5) years or both fines and imprisonment.

Chapter (VI)

Offences and Penalties

8. (a) Offences and penalties.

- (1) Any person who contravenes any provision of this Act or the Convention or who fails to comply with any provision, thereof with which it is his or her duty to comply, shall be guilty of an offence.
- (2) The failure to carry an oil record book or cargo record book on board a ship shall be construed as an offence and the person at fault shall be liable on conviction to a fine not exceeding kyats 500,000.
- (3) Any person who fails to comply with any of the regulations regarding entries to be made in any oil record book or cargo record shall be guilty of an offence and shall be liable on conviction to a fine not exceeding kyats 500,000.
- (4) Any person who makes an entry in any oil record book or cargo record book carried or any record which is to his knowledge false or misleading in any material particular shall be guilty of an offence and shall be liable on conviction to a fine not exceeding kyats 1,000,000 or to imprisonment for a term not exceeding 1 years or to both.

- (6) If any ship is detained and the ship proceeds to sea before it is released by the Department any person who sends the ship to sea shall be guilty of an offence and shall be liable on conviction to a fine not exceeding kyats 1,000,000 or to imprisonment for a term not exceeding 2 years or to both.
- (7) Any discharge of oil or oil mixture into Myanmar water from the ship or from land without permission shall be construed as an offence and the person guilty of the offence shall be liable to a fine not exceeding kyats 2,000,000 to imprisonment not exceeding 2 years or to both.
- (8) Any discharge of oil or oil mixture from any ship into the sea or into Myanmar water shall be construed as an offence and the person guilty of the offence shall be liable for each offence to a fine nor exceeding kyats 2,000,000 or to imprisonment not exceeding 2 years or to both.
- (9) Any discharge into Myanmar waters of noxious liquid

- (12) Failure of any person to abide by the regulations regarding reception facilities for ships for the disposal of waste material

Part VII
Jurisdiction

- 9 (a) Any offence contemplated in section 8 sub-section (a) shall, for purposes in relation to jurisdiction of a court to try the offence be deemed to have been committed within the area of jurisdiction of the court in which the prosecution is instituted.
- (b)
court shall have jurisdiction to impose any penalty prescribed by this Act.

Part VIII
Miscellaneous

10. In the event that anything in this Act which is written in the Myanmar language is in contravention to a provision written in the English Language contain that in an Annex to the Act, the English version shall prevail.
11. Notwithstanding any provision contained in existing Laws, all matters related to the provisions of the Convention, Protocol and Annexes, contained in Tables (1) to (7) must be duly implemented in accordance with this Act.
12. Notwithstanding that a provision is contained in any existing law, if the said provision is in contravention to or differs from any such provision contained in this Act, the provision contained in this Act shall prevail.
13. If a provision in the by-laws enacted under this Act, deal with a matter similar to that contained in a provision of the Convention, only the provisions contained in the bylaws shall be implemented.
14. In implementing the provisions under this Law:
- (a) The Ministry, with the approval of the Union government, can promulgate necessary by-laws, and rules and regulations.
- (b) The Ministry can promulgate necessary orders, rules and regulations; notices; and directives. The Department can post orders and directives.

Htin Kyaw
President
Republic of the Union of Myanmar

There are always problems with the reduced number of ratifications of international conventions by States. The effectiveness of international legal framework depends on

Myanmar has signed the International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 in December 2016 and therefore the Department of Marine Administration envisages that would encourage national organizations and maritime stakeholders including oil and gas industries to implement effectively and fulfill the requirements of the Convention with strong commitment.

Under the OPRC Convention, ships are required to carry a shipboard oil pollution emergency plan and to report incidents of pollution to coastal authorities. The OPRC Convention, 1990 facilitates international co-operation and mutual assistance in preparing for and responding to a major oil pollution incident and further encourages States to develop and maintain an adequate capability to deal with oil pollution emergencies.

The Department of Marine Administration has already finalized the Yangon River Oil Spill Contingency Plan, and the Myanmar Port Authority (MPA) will implement the plan area along the Yangon River, the Myanmar Port Authority is ultimately responsible for government port facility operations and to develop and maintain an oil spill contingency plan covering all port facilities along the Yangon river.²⁵⁸

Myanmar Port Authority has an obligation to plan, maintain and initiate oil spill response action up to Tier 2 spill that occur within Port limits, or that occur outside Port limits but which may impact on port operations. Myanmar Port Authority also has an obligation to have in place arrangements for the combating of a spill that may exceed Tier 1 response or will affect areas outside the Port limits.²⁵⁹

The Yangon Oil Spill Contingency Plan has been prepared as required by the Government, to be consistent with the National Oil Spill Contingency Plan (NOSCP), is the State plan for the response to an oil spill of any size. Whilst the Yangon Oil Spill Contingency Plan has been prepared for a response to a Tier G 0.TQq0.000008874 0 595.5 8

Activation of the National Oil Spill Contingency Plan, and hence mobilization of the associated resource, will be initiated by the National Incident Commander (NIC) hence the need for the Yangon Port Incident Commander to ensure that the NIC is informed of any incident and regularly updated on the incident response progression.²⁶¹

Myanmar Port Authority is responsible for overall management of all emergency situations within Yangon Port Limits, including oil spills. Myanmar Port Authority shall designate a Yangon Ports Incident Commander (YPIC) for spill responses, area coordinator for liaising with Emergency Response Teams, and corresponding governmental organizations where necessary, during an oil spill.²⁶²

response and staffing requirements in co-operation with Department of Marine Administration and response teams.²⁶⁵

Myanmar Port Authority shall ensure that the objectives and strategies outlined in the Action Plan are carried out effectively. Myanmar Port Authority is responsible for maintenance of safe working practices on site and a complete record of operations during Tiered responses. Department of Marine Administration would also ensure that the Response Team receives required information for spill response.²⁶⁶

In the event of identified or suspected pollution from a ship, Myanmar Port Authority can take samples from its cargo, lubricating oil and bunker tanks. Myanmar Port Authority will compile contracts, as required, for provision of equipment and labour from Ports sources and also responsible for receiving claims for compensation or other claims resulting from an oil spill or response. Myanmar Port Authority may require identifying and mobilizing additional staff or external sources for field response teams during prolonged or major spill response activities.²⁶⁷

Myanmar Port Authority is responsible for response termination and shall provide onsite advice and assistance to Responder Teams in the handling and storage of recovered wastes. Myanmar Port Authority shall maintain a complete record of operation during responses and is responsible



Table 1. Nation Oil Spill Contingency Plan Timeline

Sources: Department of Marine Administration

The purpose of this Contingency Plan is to better prepare the States to respond immediately and effectively in an event of oil spill pollution. Since the plan has yet to come into force, it will be premature to comment on the success of the plan.

Conclusion

4.1 Summary

Marine pollution is a serious problem in all areas of the world. Every State is obliged to prevent, control, and reduce pollution of the environment. According to the UNCLOS III 1982, States must establish international rules and standards to prevent reduce and control pollution of the marine environment. They must also adopt

national laws for marine pollution which at least have the same effects as that of generally accepted international rules and standards. This commitment causes all States to ensuring that their national law complies with standards generally accepted under international law. Thus, there are always problems when there is a reduced number of ratifications of international conventions by States, since the effectiveness of the international legal framework depend on the number of States that implement the framework in it national laws.

States should promote the effective exchange of information and, where appropriate, the building of institutional relation between regional institutions concerning with environment and development of the ocean. This requires cooperation amongst the Member States. They should ensure the effective operation of coordinating systems and reporting arrangements for the components of the United Nations System dealing with environment and development in marine and coastal areas, and enhance their links with other concerned international organizations, including donor and assistance agencies. General marine issues, including their environmental and developmental aspect, should enjoy regular consideration within the United Nations System at the intergovernmental level. States should also strengthen existing intergovernmental regional cooperation and coordination among all relevant organizations and bodies, development assistance and donor agencies, and the private sectors.

Most countries have provided environmental conservation laws, which provided environmental conservation laws, which include management, assessment and monitoring systems to protect the marine environment. In order to properly implement these systems stipulated under the law, States need the establishment of financial resources in their territories. It is therefore, required that National governments, when necessary, should be assisted in implementing the principles of relevant international agreements, reflected in the United Nations Convention on the Law of the Sea. For instance, conventions such as MARPOL require technical equipment and established facilities, as well as the implementation of specific standards during ship construction. Developing States would require economic as well as technical assistance and expertise to put in place the required system and for its effective functioning. This being so, developed countries shall support the developing countries in financial, scientific and technical matters in accordance with the provisions of the United Nations Conventions on the Law of the Sea, 1982. However, the implementation of such provisions is weak at present. Moreover, States governments have laid down

laws, regulation

national legislation. Only then, law enforcement would be able to become tangible and effective implementation of the relevant convention would be achieved.

To balance economic development and preservation of the environment is a lasting issue that society must consider so as to attain long term development. As far as the marine environment is concerned, because we depend largely on the oceans, it is necessary to take adequate measures to protect the marine environment. Marine pollution as one of the major threats to the ocean is adequately regulated by a legal framework created by international law. In the regulatory law regime, IMO conventions undoubtedly play a vital role. MARPOL 73/78, which is entirely preventive law in scope, is by far the most important one among all the marine pollution conventions. As mentioned above, the degree of effectiveness of international instruments depends on enforcement. More specifically, it relies on national legislation and enforcement practices of the contracting states.

Oil pollution from maritime transport is a continuous and unpredictable threat to the quality of the marine environment. Many initiatives have been taken and even more regulations have been implemented aiming at the IMO Proclamation for Clean Seas. As result, there has been a significant reduction in oil spillage generated by ships and ill important pollution players and a challenge to the marine environment mainly due to their potential for massive and catastrophic spills.

Thus it can be said that major challenges are waiting ahead for Myanmar on port development projects, which have already started. In view of the fact that Marine Pollution Law is crucially important for a littoral State, Myanmar should be aware that idling with the *status quo*, rather than taking initiatives to preserve the marine environment and prevent pollution, given the absence of mechanism to monitor and control the marine environment, may lead to detrimental consequences. In combating oil pollution Myanmar must carry out an effective response. In order to have an effective response for oil spill pollution at sea, Myanmar should provide knowledge on oil pollution to all stakes-holders concerned, put into force contingency plans, establish the mechanism for oil spill response, develop a national maritime law and create an agreement between neighbouring countries and also for the region. Furthermore, the oil-combating unit needs highly skilled human resources and effective equipment for combating operations as well as technical support. A wide range of knowledge covering different educational and technical backgrounds such as

engineers, maritime experienced specialists in ship o

- Existing legislation needs to be development and implementation promulgates to implement comprehensively the international conventions it is party to.
- documents on marine management needs to be strengthened.
- Training and international cooperation in this regard needs to be undertaken in order to create high quality human resources in this field.
- Multiple authorities deal with one or more aspect of pollution prevention, making the system more complex.
- A centralized authority with clearly defined responsibilities needs to be established.
- The institutional framework for preventive monitoring and enforcement is weak.
- Strict and effective measures need to be imposed on any act in violation of the law.
- The National Oil Spill Contingency Plan has been prepared but is not yet in force.
- The Plan needs to be finalized and put into force, without undue delay.
- Resources for establishing facilities, and acquiring technical equipment required by the conventions is inadequate.
- International cooperation should be sought for economic as well as technical assistance to put such a system in place.
- Port State control inspection needs to

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