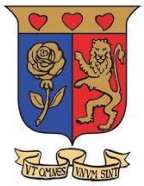

Strathmore University

Law School

THE WELL FROM HELL: REVIEWING REGIONAL INTEGRATION AND TRANSBOUNDARY COORDINATION IN OFFSHORE OIL AND GAS DEVELOPMENT IN THE WESTERN INDIAN OCEAN REGION

Submitted in partial fulfilment of the requirements of the Bachelor of Laws Degree, Strathmore University Law School

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DECLARATION

I, **JOY WANDERWA MUYA**, do hereby declare that this research is my original work and that to the best of my knowledge and belief, it has not been previously, in its entirety or in part, been submitted to any other university for a degree or diploma. Other works cited or referred to are accordingly acknowledged.

Signed: ….....

Date: ….....

This dissertation has been submitted for examination with my approval as University Supervisor.

Signed: ….....

Purity Wangigi

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B. List of Statutory Instruments

International

Kenya

Mozambique

LIST OF ABBREVIATIONS

BP	British Petroleum
EBM	Ecosystem-Based Management
GDP	Gross Domestic Product
GoM	Gulf of Mexico
LNG	Liquefied Natural Gas
NOAA	National Oceanic and Atmospheric Administration
NGO	Non-Governmental Organisation
NOSRC	National Oil Spill Response Committee
NOSCP	National Oil Spill Contingency Plan
RCU	Regional Coordination Unit
SAFMAR	National Maritime Administration and Safety Authority
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Program
UNDP	United Nations Development Program
WIO	Western Indian Ocean
WWF	World Wildlife Fund

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ABSTRACT

The Eastern Africa Coastline - also known as the Western Indian Ocean - has become the new frontier for offshore oil and gas development following promising discoveries in the region. In the past decade, various public and private stakeholders have rushed to exploit this previously inaccessible underwater resource which seems to promise substantial economic growth. Despite these developments, offshore installations present several ecological challenges globally and the industry has been described as dangerous and complex. Not only does it require the best technological equipment, offshore oil and gas development cannot thrive under a weak, unilaterally implemented regulatory framework. In an attempt to resolve this, the Nairobi Convention was created to respond to the need for regional integration in the regulation of offshore oil within the Western Indian Ocean. However, this instrument provides broad 'umbrella' provisions governing offshore operations and requires national legislation to adopt corresponding measures to protect the marine environment. This dissertation therefore delves into an analysis of measures taken by the Contracting Parties to the Nairobi Convention in their national legislations; advocating strongly for an integrated and coordinated approach towards the development and management of offshore oil in the WIO.

CHAPTER I

1.0. Introduction

Imagine conducting an 'open heart surgery at 5,000 feet in the dark'.[1] This is what offshore oil deep water repairs have been likened to;[2] the truth of which became evident following the Montara rig leak[3] and the Gulf of Mexico blowout[4] where the remediation of accidents in deep water proved extremely complex. In fact, in describing the offshore oil industry, Mitropoulos defined the ardent search as 'deep, distant, dangerous and difficult'.[5]

Ventures in offshore oil explorations have been belaboured with immense and unforeseen environmental challenges that continue to emerge with bolder innovation and activity within the industry. Accidental pollution arising thereof has been one of the more pronounced trials associated with offshore mining and has caused significant environmental catastrophes over the years.[6] The most common causes of oil spills in offshore installations include blow-outs arising from: loss of well control during drilling or mining operations, damaged pipelines, well break while abandoning wells, and other on-platform accidents provoked by fires, extreme weather conditions *etc*.[7]

There were 497 accidents on offshore oil rigs reported in 2016 alone.[8] Therefore, the inevitability of accidents undergirding offshore oil explorations makes it a question of not 'if', but 'when' will the accident happen. The predominant concern surrounding offshore explorations is whether a state is well equipped to respond to emergency accidents involving

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[1] https://archive.nytimes.com/www.nytimes.com/gwire/2010/06/02/02greenwire-industry-claims-of-proventechnology-went-unch-55514.html?pagewanted=all on 24 February 2019.

[2] An executive from BP Exploration and Production made this analogy when illustrating the difficulties of capping and controlling well flow following a breakout.

[3] Australian Maritime Safety Authority, *Twenty-First Annual Report 2010 – 11*, 2010, 19 - 62.

[4] National Commission on the BP Deepwater Horizon Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, 2011, see generally.

[5] Efthimios E. Mitropoulos is a former Secretary-General for the International Maritime Organisation. Statement made on 15 November 2010.

[6] Yusuf Y.M, 'Environmental Problems Associated with Offshore Oil and Gas Activities' 12 *Offshore Petroleum Exploration and Production: Challenges and Responses* 1, 2014, 3.

[7] Yusuf Y.M, 'Environmental Problems Associated with Offshore Oil and Gas Activities', 10.

[8] Howell P, 'BP Oil Spill Haunts Off-Shore Drilling Industry 8 Years Later' https://www.cnbc.com/2018/04/20/off-shore-drilling-is-still-a-terrible-idea-8-years-after-bp-oil-spill.html on 13 October 2019.

blowouts and oil spills on offshore oil rigs. The urgency of reaction is attributed to the severe repercussions associated with oil spills as well as the rapidity with which it can destroy a marine environment. Oil spills can be minor or major and may result in the total disruption of the ecosystem through the elimination of food sources or destruction of sensitive life forms; to more sub-lethal effects such as poisoning, psychological damages and bioaccumulation.[9] It is important to note that damage from spilled oil is not only destructive to the direct marine environment, but to human activities surrounding recreation, industry and fishing which impacts on the quality of life and may carry with it substantial economic harm.[10] Exploratory activities and offshore development that are conducted in the vicinity of maritime boundaries between contiguous States pose legitimate risks of potential transboundary pollution which requires bilateral and multilateral measures to be resolved.[11] For instance, the Montara incident in the Timor Sea affected multiple states and is presently being resolved on a bilateral basis between Indonesia and Australia.[12]

The Western Indian Ocean has become the 'El Dorado' for offshore exploration activities, with discoveries spanning from Somalia all the way down to South Africa (including Kenya).[13] In fact, it has been reported that the full potential of oil discovery in the region has yet to be realised.[14] In 2012, 'four of the five biggest natural oil and gas discoveries happened off the coast of Mozambique'.[15] Discoveries in Mozambique and Tanzania have spurred further interest by investors in the potential of offshore oil stores in the WIO.[16] Permits have already been awarded in Mozambique and seismic surveys are presently underway seeking to unlock the hidden potential of wealth in the offshore zone of Mozambique and the Comoros Islands.[17] Similarly, Madagascar has attracted investors who are hoping to uncover more stores of

[9] Yusuf Y.M, 'Environmental Problems Associated with Offshore Oil and Gas Activities', 11.
[10] Yusuf Y.M, 'Environmental Problems Associated with Offshore Oil and Gas Activities', 12.
[11] https://cil.nus.edu.sg/wp-content/uploads/2010/08/YounaLyons-Transboundary-Pollution-From-Offshore-Platforms.pdf on 14 March 2020.
[12] http://www.environment.gov.au/marine/marine-pollution/montara-oil-spill on 14 March 2020.
[13] French Institute of International Relations, OCP Policy Centre, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015.
[14] Collins T, 'Indian Ocean's Oil and Gas: Africa's Next Energy Frontier' https://africanbusinessmagazine.com/sectors/energy/indian-ocean-oil-and-gas-africas-next-energy-frontier/ on 28 June 2019.
[15] Statement made by John Kerry at an address at the University of Virginia, 2013. See: https://2009-2017.state.gov/secretary/remarks/2013/02/205021.htm on 26 February 2019.
[16] French Institute of International Relations, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 21.
[17] French Institute of International Relations, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 21.

offshore oil and gas in the northern zone and the Morondava offshore basin shared with the island of Juan de Nova where drilling was anticipated to begin in 2016.[18] A long-standing maritime dispute between Somalia and Kenya is on-going, with both sides laying claim to a 100,000 km^2 triangle containing potential stores of offshore oil and gas.[19] British companies Soma Oil & Gas and Spectrum Geo have already conducted seismic surveys off the Somali coast of Garad and Kismayu, promising of oil reserves totalling one hundred billion barrels.[20]

1.1.Statement of Problem

Article 208 (5) of the United Nations Convention on the Law of the Sea (UNCLOS) calls upon states to collaborate and 'establish global and **regional rules**, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment' [emphasis added].[21] Since there is no binding international instrument that sets standards and guidelines governing the construction and operation of offshore installations, the Nairobi Convention[22] of 2010 forms the regulatory nexus of the western Indian Ocean (WIO) in the protection, management and development of marine and coastal resources; incorporating emerging issues such as coastal zone management and climate change as well as entrenching the commitment to cooperate in protecting and managing the WIO. However, this instrument provides broad 'umbrella' provisions governing offshore operations and requires national legislation to adopt corresponding measures to protect the marine environment

Nonetheless, each Contracting Party to the Convention is governed under varying and unique regimes and a number of the Contracting States lack corresponding laws in their regulatory policy.[23] These differences in the regimes are further exacerbated by the nascent nature of

[18] French Institute of International Relations, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 22.

[19] Collins T, 'Indian Ocean's Oil and Gas: Africa's Next Energy Frontier' https://africanbusinessmagazine.com/sectors/energy/indian-ocean-oil-and-gas-africas-next-energy-frontier/ on 28 June 2019.

[20] Oluoch F, 'Gathering Storm: Kenya, Somalia Continue to Spar Over Offshore Riches' https://www.theeastafrican.co.ke/news/ea/Kenya-and-Somalia-spar-over-offshore-riches/4552908-4996326-11ga0r6/index.html on 13 July 2019.

[21] Article 208 (5), *United Nations Convention on the Law of the Sea*, 10 December 1982, 1833 UNTS.

[22] The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean.

[23] French Institute of International Relations, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 24.

offshore explorations in the region, with majority of the offshore areas of interest remaining under-explored.[24] It must be affirmed that it is because of these variances in governance - coupled with the serious environmental threats posed by offshore drilling - that the Contracting States thereto should align themselves to the Nairobi Convention with equivalent domestic laws enhancing the Convention's application. Particularly, the Convention should be proactive in ensuring that the provisions governing emerging issues such as the exploration and production of oil and gas are implemented and enforced by Contracting Parties. Articles 8 and 12 of the Convention provide for pollution from seabed activities, and cooperation in combatting pollution in cases of emergency respectively.[25] Because these sections provide an umbrella protection for offshore oil activities, a greater elaboration of these safeguards are necessitated in domestic texts seeking to protect the marine environment from accidental spills and blowouts. This dissertation therefore explores the failure to do so by the Contracting Parties which poses significant risks to the marine environment in the novel industry.

1.2. Statement of Objectives

(i) To investigate the domestic laws of the Contracting Parties to the Nairobi Convention for any deviations from the Convention.

(ii) To highlight the need for integration and coordination in the Western Indian Ocean region in the development of the marine environment through the creation of corresponding and equivalent domestic laws to those of the Nairobi Convention.

(iii) To propose the need for a binding regulatory instrument in enhancing compliance and enforcement within the region, cognisant of the transboundary impact of offshore oil activities.

[24] French Institute of International Relations, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 25.

[25] Articles 8, 12 and 13, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean* (2010).

1.3. Research Questions

(i) Does the WIO region apply an integrated and coordinated approach in its exploitation of natural resources through corresponding national laws to those of the Nairobi Convention?

(ii) What lessons can the Amended Nairobi Convention glean from the Gulf of Mexico; in order to guide integration and coordination efforts in mitigating the worst effects accruing from offshore oil spills and blowouts?

(iii) Do binding regional instruments on environmental protection and management serve as more effective in compliance and enforcement?

1.4.Hypothesis

1. For the Amended Nairobi Convention to be effective, active steps towards the translation and adoption of regional obligations into national policy is necessary in curtailing the environmental degradation of the marine environment.
2. The ocean, in forming the global commons, requires a coordinated and integrated approach in its exploitation of natural resources for the mitigation of the impact of accidental blowouts to be successful.
3. The voluntary nature of the Amended Nairobi Convention is deleterious to the enforcement of measures thereunder, which is aggravated by a failure to translate these obligations into national policy. There is need to transform the Convention into a binding document to enhance greater compliance.

1.5. Justification of Study

The discussion above indicates the volatility of offshore oil exploration and production whose impact exceeds the boundaries of national jurisdictions. Owing to the transboundary nature of marine environments and the petroleum industry a coordinated approach towards multilateral and regional arrangements cannot be understated. With the Western Indian Ocean region

undergoing rapid development and change, there is a need to appraise the sufficiency of the current regulatory system nationally and whether it corresponds to the Nairobi Convention in compliance with its obligations therein. This paper aims to address any regulatory deviations in setting important groundwork from which the exploitation of offshore resources can flow. It is important that the aforementioned states learn lessons from their experienced western counterparts by adopting a binding regional agreement seeking to set offshore mining standards and guidelines for the construction and operation of offshore mines.

1.6.Literature Review

There is a pressing need for a regional environmental regulation regime in offshore oil exploration within the eastern Africa region, predominantly prompted by the significant exploration activities along the eastern Africa coastline and the potential for commercial offshore oil discoveries within the region.[26]

According to *Hasson*, past lessons from foreign oil jurisdictions have illustrated that government oversight and corporate self-regulation in offshore oil activities have proved deficient on account of three main factors:[27]

(i) Difficulty in assessing the environmental impact of offshore oil explorations particularly in deep sea;

(ii) The costliness of conducting reviews and implementing safe development measures; and

(iii) Competitive markets coupled with the promise of short-term financial profits that deter investment in longer term environmental protections.[28]

The purview of environmental law is wide, seeking to take constructive measures in protecting air, water, land and vegetation from pollutants *e.g.* toxic wastes, harmful air emissions *etc*. It also strives to delimit the poor utilisation of natural resources such as the improper disposal of

[26] https://www.eac.int/investment/why-east-africa/investment-opportunities/oil-and-gas\ on 23 February 2019.

[27] National Commission on the BP Deepwater Horizon Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, 2011, 55 – 80.

[28] Hasson N, Deep Water Offshore Oil Exploration Regulation: The Need for a Global Environmental Regulation Regime, *Journal of Energy, Climate and the Environment*, 287-288 http://law2.wlu.edu/deptimages/Journal%20of%20Energy,%20Climate,%20and%20the%20Environment/Hasson.pdf on 22 February 2019.

hazardous waste.[29] Accordingly, literature largely addresses air pollution and land deterioration as a consequence of oil and gas exploration and excavation, with several studies conducted in assessing the extent of the damage accrued to the environment on account of oil and gas activities.[30]

Offshore oil and gas development remains an area of law that is poorly regulated and coordinated.[31] Not surprisingly, special protections in the general offshore oil industry are particularly evident in high risk regions *e.g.* drilling sites like the Gulf of Mexico where monumental repercussions to poor environmental safeguards prompted the employment of environmental protection mechanisms.[32] Likewise, the history of offshore drilling exploration is fraught with reactionary measures as opposed to preventative principles and policies.[33] Insufficient scientific data has made it difficult to predict the risks associated with offshore oil extraction and consequently, the legislative reaction has been poor and fairly inadequate.[34] This is more so the case in the WIO region, particularly with the general novelty of the offshore oil industry.[35]

Environmental sustainability as an ideal saw its genesis in the 1970s when it was concluded that 'our industrial way of life with its ethos of expansion' is not sustainable.[36] The UN Conference on the Human Environment was held thereafter to confront the emerging dilemma surrounding the erosion of natural resources by industrial production; and it was from this diplomatic engagement that the notions of transboundary resources, the global commons and

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[29] United Nations Environment Programme, *Environmental management in oil and gas exploration and production*, 1997, see generally.

[30] United Nations Development Programme, *The Policy, Legal and Regulatory Framework in the Extractive Industry of Kenya: Consideration of the interests of local communities, women, youth and the vulnerable and the environmental sustainability of the industry*, 2014, see generally.

[31] The law is not categorical in its protection of marine oil and gas activities, with the primary statutory provisions in Kenya broadly covering inland and offshore oil explorations via the Petroleum (Exploration and Production) Act (Cap 308 No. 19 of 1985) and the Petroleum Development Fund (which is not relevant to the purposes of this paper). See: http://extractives-baraza.com/resources/legal-corner/bill-statutes-and-regulations/statutes on 25 February 2019.

[32] National Commission on the BP Deepwater Horizon Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, 2011, 249-292.

[33] https://www.bsee.gov/sites/bsee.gov/files/technical-presentations/development/university-of-houston-herbst-02-02-12-pdf.pdf on 24 February 2019.

[34] Brief for Global Sustainable Development Report, *Strengthening the international regulation of offshore oil and gas activities*, 2015, 1-3.

[35] French Institute of International Relations, OCP Policy Centre, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 10.

[36] Goldsmith E, Allen R, *A Blueprint for Survival*, 1 ed, Penguins Books Ltd, London, 1973.

cooperative management materialised as presently held. The rule of 'global trusteeship' developed from this conference, functioning as the principle upon which sustainable development is hinged.[37]

The notion of sustainable development as essential to resource exploitation in ensuring economic growth that is environmentally sound is not novel. In fact, it has been noted by *Silamoi* that 'the biggest problem in [the region] is not only the absence of relevant laws, but also the failure to implement them'.[38] In agreement with this position, and cognisant of the extensive discourse surrounding environmental rights, it is nonetheless instructive to note that literature discussing the Nairobi Convention is few and far between, with limited data and information regarding the current environmental impact of seismic surveys and exploration; which is unsurprising considering the infancy of the venture in the WIO.[39]

1.7. Research Design

1.7.1. Research Design and Methodology

The research will adopt an exploratory design that will primarily undertake literature study or 'desk' research through the analysis of various materials such as textbooks, journal articles, conventions and treaties, statutes, case law and annual reports. The data collected will be mainly qualitative research, seeking to classify, categorise and describe certain patterns and themes and will be done solely through document analysis.

1.7.2. Limitations

(i) Although the study of offshore oil exploitation is wide, this paper will be limited to its environmental impact with a specific focus on the deterioration of the marine environment. Issues of accidental pollution through oil spills will form the crux of this analysis.

(ii) Recognising the need for an international environmental regulation mechanism in the offshore oil and gas industry, this paper will nonetheless focus on regional systems; and more specifically along the eastern African coast *i.e.* the Western Indian Ocean region.

[37] United Nations, *Conference on the Human Environment*, 1972, 45.

[38] Silamoi F. J, 'Legal and Regulatory Framework of the Extractives Industry in Kenya: Environmental Aspect' Unpublished LLB Thesis, Strathmore University Law School, Nairobi, 2016, 8.

[39] UNDP, '*The Policy, Legal and Regulatory Framework in the Extractive Industry of Kenya*', 41.

(iii) Recognising the negative impact that accidental oil spills and blowouts have on human communities, this paper will nonetheless focus exclusively on the need for more elaborate safeguards in protecting the marine environment, and will not touch on restoration measures or compensation schemes.

(iv) The research is constrained by time and will be only be conducted over a period of nine months. Any change in factors and conditions beyond this time frame will therefore not be considered by this research.

1.8. Chapter Breakdown

Chapter 1: Introduction

This is the introductory section of the study aiming to entrench the context in which it is set. The basis of the study is explored hereunder and the structure established. It's broken down into the following sub-sections: background, statement of problem, statement of objectives, hypothesis, justification of study and literature review.

Chapter 2: Theoretical Framework

This section will involve a discussion on the theoretical underpinnings undertaken in this research to inform sound and sustainable environmental management.

Chapter 3: An appraisal of the national policy and legislative framework of the Contracting Parties of the Nairobi Convention governing oil exploration; with environmental sustainability as a basis for its regulation. This section will also include an analysis of the 'Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean.'

Chapter 4: A discussion on a coordinated and integrated approach in the exploitation of natural resources for the mitigation of the impact of accidental blowouts. The research will explore the marine waters as forming the global commons, highlighting the risk of transboundary impact flowing from the misuse of marine resources. This will involve an assessment of international principles of offshore oil explorations and a comparative study with other regional environmental regulation systems already in place; aiming to assess their success/failures and identify which regulatory model has been most effective. This paper seeks to include a comparative analysis of the Gulf of Mexico region.

Chapter 5: Recommendations and Conclusion.

Proposal for the ideal regional environmental regulation system drawing from the research amassed, proposing the need for a binding document.

3.5. Duration

This study runs from March to November 2019.

CHAPTER II

2.0. Theoretical Framework

Resource exploitation is undergirded by economic drivers; seeking development that is often solely directed towards economic development.[40] This approach tends to alienate other social and ecological factors whose neglect renders the venture unsustainable in the long-term, with only short-term gains to boast of. The sustainability of resource-driven activity has come to the fore in recent decades, owing largely to the recognition of environmental deterioration and the Malthusian-quandary[41] surrounding finite, non-renewable resources and a disproportionately high demand propelling resource consumption.[42] Two broad pathways may be opted for in the development and exploitation of natural resources: 'business as usual' or sustainable marine spatial planning that promotes a blue economy.[43] The former prioritises short-term growth in profit and wealth, by-and-large abandoning strong regulatory structures in environmental protection. Alternatively, the sustainable blue economy contemplates sustainable economic development by enhancing effective conservation mechanisms in the exploitation of resources.[44]

A discussion on the theoretical framework applicable in this paper will be supplied below, seeking to centre its application on economic theories of growth and development in recognition of the cogent economic drivers threatening environmental sustainability. Thus, the paper strives to propose a balance between economic growth and environmental sustainability vis-à-vis a 'steady state economics' as a reaction to the regressive environmental Kuznets curve.

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[40] Basiago A. D, 'Economic, social and environmental sustainability in development theory and urban planning practice' 19 *The Environmentalist* 1, 1999, 146 - 147.

[41] Thomas Malthus submitted that population growth is necessarily limited by resources, arguing that this disproportionate growth posed a risk of insufficient available resources exacerbated by high unsustainable demand.

[42] Malthus T, Chapter IV in *An Essay on the Principle of Population and a Summary View of the Principle of Population*, Penguin Classics, England, 1983, see generally.

[43] World Bank Group, *The Potential of the Blue Economy: Increasing Long-Term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*, 2017, 5.

[44] World Bank Group, *The Potential of the Blue Economy: Increasing Long-Term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*, 2017, 5.

2.1.The Environmental Kuznets Curve

The *Environmental Kuznets Curve*, an economic theory, posits that environmental deterioration is the immediate consequence of economic expansion; stipulating that a society can only improve its relationship with the environment after a certain level of economic growth.[45] Thus, according to this proposition - at eastern Africa's current 'developing' status – the region is unable to achieve environmental sustainability in conjunction with economic development. Consequently, this theory proposes a trade-off in environmental protection vis-a-vis GDP expansion, and is 'justified' by the trends reflected in global developmental advancements.[46]

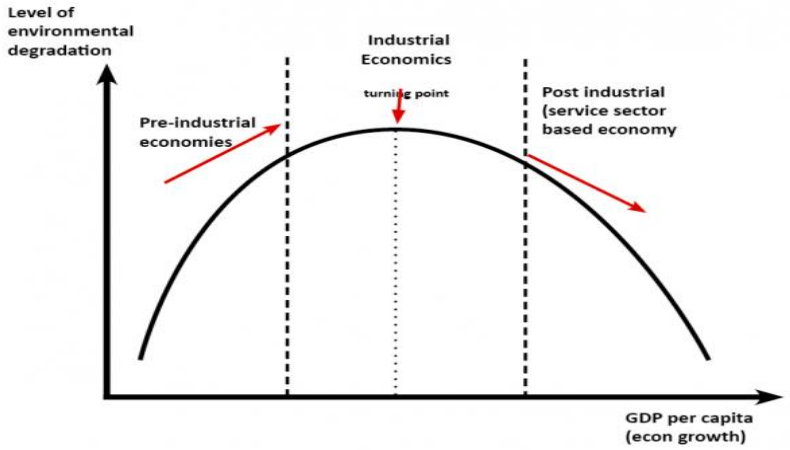

Figure 1. Illustration of the environmental Kuznets Curve Hypothesis

Evidently, the Kuznets Curve postulates that underdeveloped countries must accept environmental deterioration as a short-term consequence of economic development. However, the association between environmental deterioration and economic growth is weak and such a conceptualisation overlooks the reality of finite resources which require protection through deliberately targeted policies, guidelines and legislation.[47] An enabling environment that optimises resource-use can obviate the need for such a trade-off. The development framework of the early 20th Century predominantly followed the model identified in the Kuznets Curve, culminating in resource depletion and pollution in favour of economic prosperity.[48] However, owing to the growing concern of a finite ecosystem, economists questioned exponential growth

[45] Dinda S, 'Environmental Kuznets Curve Hypothesis: A Survey' 49 *Ecological Economists* 4, 2004, 432 - 433.
[46] Stern D. I, 'The Rise and Fall of the Environmental Kuznets Curve' 32 *World Development* 8, 2004.
[47] Romeiro A. R, 'Sustainable development: an ecological economics perspective' 26 *Estudos Avancados* 74, 2012, see generally.
[48] Basiago A. D, 'Economic, social and environmental sustainability in development theory and urban planning practice, 146.

in resource use countered with a linear growth of pollution control mechanisms. It was concluded that in solely pursuing economic growth, the means sought in doing so had grave long-term implications for the very development desired.[49] Thus the importance of economic and environmental sustainability as integrated and interlinked became apparent.

2.2. Steady State Economics

Subsequently, the *steady state economics* theory was developed by Daly where the economy is viewed as a sub-system of a closed, finite ecosystem. Under steady state economics, an environment is neither depleted beyond its regenerative capacity nor polluted beyond its absorptive capacity, but instead seeks a state of equilibrium.[50] It is upon this theory that this paper finds its basis. This theory presupposes that economic development must be constrained by environmental considerations. This economic approach has been employed due to the inextricable link between the environmental and economic components of a region; evident where the by-products of an economy (*e.g.* technology) often move to and impact the environment or where natural resources transition from the environment to the economy.[51] In achieving a steady state economy of long-term and sustainable exploitation, adherence to the following rules are required:[52]

(i) The maintenance of healthy ecosystems;
(ii) Extraction of renewable resources at no rate faster than they can be regenerated;
(iii) The consumption of non-renewable resources such as fossil fuels and mineral at no rate faster than they can be replaced by the discovery of renewable alternatives and substitutes; and
(iv) The disposal and deposit of waste at no rate faster than it can be assimilated.

Taking cognisance of the current rapidity of environmental deterioration, resource depletion and climate change, the sustainable development of resources should be viewed as an organising principle governing activity as opposed to approaching it as a societal end. To this

[49] Basiago A. D, 'Economic, social and environmental sustainability in development theory and urban planning practice, 147.
[50] Daly H. E, *Steady-State Economics*, 2 Ed, Island Press, Washington DC, 1991.
[51] Gilliland M.W, 'A Conceptual Framework for Environmental Protection' 8 *Environmental Management* 6, 1984, 463.
[52] https://steadystate.org/wp-content/uploads/CASSE_Brief_SSE.pdf on 10 September 2019.

end, the importance of marine spatial planning will be adopted by this paper in seeking to identify 'a practical way to create and establish a more rational organisation of the use of marine space and the interactions between its uses, to balance demands for development with the need to protect marine ecosystems, and to achieve social and economic objectives in an open and planned way'.[53] This conceptualisation aims to achieve the following:[54]

(i) Increased horizontal and vertical management to balance the development of a range of maritime activities;
(ii) Reduction of conflict in the exploitation of marine resources;
(iii) Contribution to equitable access and equitable utilisation of the marine resources;
(iv) Improved protection of the environment through the identification and reduction of impacts; and
(v) The identification of measures that will support and enhance good environmental practices.

The application of marine spatial planning accruing from the need for *steady state economics* in the exploitation of oil along the eastern African coast, will be hinged upon two fundamental environmental principles: sustainable development and integration and coordination.[55] An integrated and coordinated approach is an inalienable feature of marine spatial planning, drawing from the marine environment as forming the global commons and bearing a transboundary impact.[56] Integration is essential in maintaining the environment to ensure cooperation, sustainable and equitable use and harmonisation among the users of the same resources *i.e.* the western Indian Ocean in this case.[57] Although marine spatial planning can only efficiently be monitored by state agents, the absence of cross-border cooperation is crucial in accomplishing harmony and coordination along the coastal zones. This should be aligned towards common visions and objectives and shared principles and tenets enhancing sustainable development. From the foregoing discussion in Chapter 1, it is clear that challenges in offshore

[53] Ehler C and Douvere F, *Marine Spatial Planning: a step-by-step approach towards ecosystem-based management*, UNESCO, Paris, 2009, 18.
[54] United National Environment Programme, *Conceptual Framework for Marine Spatial Planning in the Mediterranean*, 2018, 5.
[55] Soto M.V, 'General principles of International Environmental Law' Core.ac.uk, 205 – 207.
[56] United National Environment Programme, *Conceptual Framework for Marine Spatial Planning in the Mediterranean*, 2018, 7.
[57] United National Environment Programme, *Conceptual Framework for Marine Spatial Planning in the Mediterranean*, 2018, 7.

activities have a transboundary dimension and therefore require the establishment and application of a common regional approach.[58]

[58] United National Environment Programme, *Conceptual Framework for Marine Spatial Planning in the Mediterranean*, 2018, 9.

CHAPTER III

3.0. Regional and National Regulatory Framework

This chapter will delve into an analysis of the regional and national policy, legal and regulatory framework governing oil and gas exploration in the eastern Africa region (WIO), focusing on national oil spill contingency plans (NOSCPs) and other regulatory measures seeking to curtail and control accidental oil spills in deep water. The Western Indian Ocean region covers: Kenya, Tanzania, Mozambique, Somalia, South Africa, Seychelles, Comoros and Madagascar. As aforementioned, each country is governed under varying and unique regimes that are exacerbated by socio-political circumstances. For example, Tanzania is governed under a strong socialist political structure that distrusts foreign intervention.[59] Kenya operates an increasingly privatised industry with a largely globalised management sector whereas Somalia's governance structure is fraught with instability due to civil strife and war.[60] Although all the Contracting Parties to the Nairobi Convention are equally important in the discourse towards achieving environmental sustainability of the marine area, this chapter will focus exclusively on the legislative structures of Mozambique and Kenya in appraising the accommodations made by the two WIO states towards the protection, management and development of the marine environment. This analysis aims to provide insights from two jurisdictions at varying degrees of economic development and at different stages of offshore oil and gas development.

Before exploring the various national regulatory frameworks of the Contracting Parties, an analysis of the Nairobi Convention is necessary in providing a broad contextual understanding of the Convention's scope and application, as well as State compliance with its provisions.

[59] French Institute of International Relations, OCP Policy Centre, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 24.
[60] French Institute of International Relations, OCP Policy Centre, *Oil and Gas in Eastern Africa: Current Developments and Future Perspectives*, 2015, 24.

3.1. The Nairobi Convention[61]

The Convention was adopted in 1985 as a United Nations Environmental Programme (UNEP) Regional Seas Programme, seeking to increase the capacity of the Western Indian Ocean to protect, manage, and develop the coastal and marine environment.[62] Taking cognisance of the transboundary issues of climate change, marine and land-based pollution, integrated coastal management and biological diversity, the Convention was amended accordingly to address these emerging challenges.[63]

3.1.2. Relevant Provisions

The thematic areas covered by the Convention include: marine and land-based pollution, management of land-based sources and activities, regional responses to pollution emergencies, the protection of the marine and coastal biodiversity and integrated coastal zone management.[64] The latter three areas will form the subject-matter of this paper, seeking to entrench their application to offshore oil activities.

Article 8 of the Convention provides for pollution from seabed activities, stating that 'Contracting Parties shall take all appropriate measures to prevent, reduce and combat pollution of the Convention area resulting directly and indirectly from the exploration and exploitation of the seabed and its subsoil'.[65] This encompasses any marine activity that results in pollution and thus applies to offshore drilling activities of oil and gas. Article 13 further discusses environmental damage from engineering activities, providing that all appropriate measures should be taken to prevent, reduce and combat environmental damage in the Convention area resulting from destructive engineering activities.[66] Relatedly, article 11 seeks to protect biological diversity through their conservation, as well as the protection and preservation of

[61] *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean,* 31 March 2010.
[62] Preamble, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean.*
[63] Martin A, 'Lessons Learned from the Nairobi Convention' International Waters Learning Exchange & Resource Network, MMP Analytical Paper, 2014, 3 - https://www.iwlearn.net/resolveuid/007182b2-70f3-4143-bb2a-48d48fec04ab on 3 September 2019.
[64] Martin A, 'Lessons Learned from the Nairobi Convention', 11.
[65] Article 8, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean* (2010).
[66] Article 13, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean* (2010).

rare or fragile ecosystems including rare, endangered or threatened species of flora and fauna and their habitats in the Convention area.[67] Whereas article 12 calls for cooperation in combating pollution in cases of emergency such as accidental pollution in offshore drilling;[68] which can be read together with article 15 that calls for the scientific and technical cooperation of Contracting Parties in the exchange of data and other scientific information.[69]

Despite these creditable provisions, the Amended Nairobi Convention is an umbrella regional agreement that requires elaboration in specialised texts and domestic regulatory translations.[70] However, due to the infancy of offshore explorations and drilling in the WIO, it has not received proper elaboration in either one which has left a void in the regional regulation of offshore oil activities – including accidental oil spills resulting therefrom.

3.1.3. Application of the Amended Nairobi Convention

For the purposes of this research, this paper will contemplate one main challenge apparent in the application of the Amended Nairobi Convention towards the protection of the marine environment from accidental oil spills resulting from offshore oil and gas development.

3.1.3.1. Corresponding Provisions: Translation and Adoption of the Convention

A challenge that arises when assessing the efficacy of the Convention in protecting the marine area is the non-compliance of States to implement and/or ratify the provisions of the instrument in their national regulatory framework, aggravated further by the non-binding nature of the instrument. This is evident under several projects, including the Western Indian Ocean GEF-Marine Highway and Coastal Contamination Prevention Project whose main objective was to build the capacity for national and regional oil response and contamination prevention.[71] Some countries – namely Kenya, Tanzania and Mozambique – have yet to update and implement a NOSCP that aligns with offshore oil and gas development. Furthermore, Somalia has no

[67] Article 11, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean* (2010).
[68] Article 12, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean* (2010).
[69] Article 15, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean* (2010).
[70] Martin A, 'Lessons Learned from the Nairobi Convention', 14 - 15.
[71] Martin A, 'Lessons Learned from the Nairobi Convention', 30.

NOSCP at all to date, which is crucial to the efficacy of the Convention since responses to offshore oil spills inevitably bear transboundary consequences.[72]

Because the Convention transfers the responsibility to develop and implement protective measures to the respective states, enforcement is hinged upon the adoption of legislation at the national level.[73] Unfortunately, a very limited analysis of the effects of the Convention at the national policy level has been done and no mechanisms have been established in confirming the translation of Convention in the jurisdictions of the Contracting Parties.

3.2. Mozambique's National Regulatory Framework

3.2.1. Brief History and Profile

In the past twenty years, nearly 64 offshore wells have been drilled in the Northern Rovuma Basin of Mozambique, located in depths of approximately 2,000 meters deep.[74] Discoveries made in Area 1 and Area 4 of the Rovuma Basin are estimated to hold more than 3,681 billion m^3 of natural gas.[75] Exploration activities in Area 1 alone were classified as six of the world's largest liquefied natural gas (LNG) discoveries in the years 2010, 2011 and 2012; which positioned Mozambique as the third largest *potential* exporter of LNG in the world according to a UNEP report.[76] Plans to construct LNG production units are underway by Anadarko Petroleum Corporation and Eni S.p.A, with an estimated production capacity of 20 million tons per day.[77] Although there is currently no LNG facility in Mozambique, following the execution of several important agreements it is anticipated that the construction of the first LNG facility in Africa will be complete by 2023. From the foregoing, it is clear that Mozambique's offshore

[72] Martin A, 'Lessons Learned from the Nairobi Convention', 31.
[73] Martin A, 'Lessons Learned from the Nairobi Convention', 31 - 33.
[74] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 23.
[75] 'Mozambique revises its petroleum legal framework in light of the giant offshore discoveries' - https://svw.no/contentassets/e8e0bb6f7e4c44048068f8303a1f80ac/mozambique-revises-its-petroleum-legal-framework-in-light-of-the-giant-offshore-discoveries.pdf on 19 September 2019.
[76] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 21.
[77] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 21.

oil and gas development is extremely dynamic and continues to grow at a rapid rate due to the attractive economic prospects presented by discoveries in the northern Rovuma Basin.[78]

In 1992, a major oil spill occurred while the tanker Katina P was transiting the Mozambique Channel. It was transporting 66,700 tonnes of fuel en-route from Venezuela to the United Arab Emirates and a freak wave disabled the vessel resulting in the initial release of approximately 3,000 tonnes of cargo. Thereafter, the tanker was towed for lightering to another tanker, however, the vessel broke and sank while in tow resulting in the release of the remainder cargo (the oil). The oil spill travelled south on the Agulhas current and some amounts were found along the South African coastline. Due to the spill, oil entered mangrove stands at the bay and a fishing ban was imposed in Maputo Bay for some time. Furthermore, salt pans along the Matola River were closed to extraction for several weeks. Although the shoreline was cleaned by the Mozambican Ministry of Public Works along with local municipalities, equipment was shipped from abroad and the response was generally poor. For example, the Mangrove stands were left to clean naturally in order to minimise further damage and the limited resources meant that the clean-up process was hampered significantly.[79]

Concerns have been raised that the accelerated development of the gas sector places a strain on government's regulatory and institutional capacity to effectively and sustainably manage and exploit the environment.[80] This is worsened by poor infrastructure and the lack of skilled personnel well acquainted with the petroleum industry.[81] It's important to note that oil spills resultant from transportation mishaps are much easier to clean-up and contain since the spill occurs on the surface or relatively close to the surface such as the Katina P incident. However, Mozambique's poor response to Katina P is illustrative of the scale of their unpreparedness to cope with an accidental spill in deep water. As discussed in chapter I, spills that occur in deep water are not only difficult to contain but also extremely hard to detect even where the machinery and technology in use is up-to-date. The Katina P incident demonstrates

[78] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 10.
[79] https://www.itopf.org/in-action/case-studies/case-study/katina-p-off-mozambique-1992/ on 6 November 2019.
[80] 'Mozambique revises its petroleum legal framework in light of the giant offshore discoveries' - https://svw.no/contentassets/e8e0bb6f7e4c44048068f8303a1f80ac/mozambique-revises-its-petroleum-legal-framework-in-light-of-the-giant-offshore-discoveries.pdf on 19 September 2019.
[81] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 47.

Mozambique's inadequate capacity to effectively respond to an accidental oil spill and ensure that there are no transboundary effects.

3.2.2. Legal Framework

In relation to upstream oil and gas activities, Mozambique has adopted at least 18 policies and 15 specific laws.[82] Although these laws enjoy intersectional application, this section will focus exclusively on the NOSCP 'adopted' by Mozambique and its capacity to adequately address accidental spills in deep water resulting from offshore exploration and production.

3.2.2.1. National Oil Spill Contingency Plan (NOSCP)

The draft NOSCP is currently under review by a working group established and constituted of relevant public institutions, NGOs and the oil industry. The Maritime Administration and Safety Authority (SAFMAR) has been designated with responding to maritime oil pollution.[83] It should be noted that the Plan fails to detail a clear clean-up policy. Furthermore, there are limited resources and facilities available capable of responding to accidental oil spills *e.g.* oil dispersants are largely inaccessible and are not treated as a primary response strategy since there are no formal dispersant application guidelines nor has the environmental impact of their use – on the mangroves, coral reefs and shallow waters – been undertaken to assess their practicality.[84]

Despite the novelty of oil and gas explorations, Mozambique has a comparatively modern petroleum legal framework when compared against those of other WIO states.[85] Nonetheless, emergency preparedness and response lacks a comprehensive regulatory structure and is thus ill-equipped to deal with a major oil spill.[86] The NOSCP is the principle law governing accidental spills. Although presently under review, it fails to sufficiently account for institutional responsibilities in response to oil spills. Furthermore, there is no record of

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[82] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 31.

[83] https://www.itopf.org/knowledge-resources/countries-territories-regions/countries/mozambique/ on 6 November 2019.

[84] https://www.itopf.org/knowledge-resources/countries-territories-regions/countries/mozambique/ on 6 November 2019.

[85] 'Mozambique revises its petroleum legal framework in light of the giant offshore discoveries' - https://svw.no/contentassets/e8e0bb6f7e4c44048068f8303a1f80ac/mozambique-revises-its-petroleum-legal-framework-in-light-of-the-giant-offshore-discoveries.pdf on 19 September 2019.

[86] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 55.

emergency preparedness through environment sensitivity mapping; neither does the NOSCP align the requirements of preparedness between the various local agencies.[87] The NOSCP is incomplete and requires extensive revision to account for inadequacies surrounding the overlap in institutional mandates contributing to inefficiencies, poor coordination mechanisms and deficient, fragmented laws governing accidental oil spills in upstream oil and gas activities. The failure to comprehensively contemplate accidental oil spills in Mozambique's marine spatial planning results in deviations from the provisions of the Amended Nairobi Convention and threatens the coastal and marine environment of the WIO. Particularly because where institutional capacity is weak and fragmented at the national level, coordination at the regional level is nearly impossible.

3.3. Kenya's National Regulatory Framework

3.3.1. Brief History and Profile

Expectations for discovering offshore oil and gas reserves in Kenya are extremely high with a number of offshore blocks already showing great potential.[88] Interest in the offshore Lamu Basin can be traced to the 1970s when the drilling of three wells – Simba-1, Maridadi-1 and Kofia-1 - was done, with minimal findings of hydrocarbon shows. Following mass offshore gas discoveries in Mozambique in 2001, renewed interest was sparked and four additional wells have been drilled: Mbawa-1 (gas discovery), Kubwa-1, Kiboko-1 and Sunbird-1 (oil and gas discoveries).[89] In July 2019, the State Auctioned off three offshore blocks, situated in a largely unexplored frontier of the Lamu Basin, to Qatar Petroleum. Eni S.p.A has a 41.25% stake, Total a 33.75% stake and Qatar Petroleum holds a 25% stake in the offshore blocks, with the three companies planning to collaborate in the exploration efforts.[90]

Additionally, Kenya and Somalia have an on-going maritime dispute before the International Court of Justice (ICJ) over the territorial status of the waters bordering both countries, that is believed to contain large deposits of oil and gas. The dispute has heightened tensions between the neighbouring states which escalated in August 2019 when the Kenyan parliament

[87] UNEP, *Institutional Capacity Needs Assessment for Strengthening Environmental Management in the Oil and Gas Sector in Mozambique*, 2018, 55.
[88] Mwabu G, 'Kenya's Oil Governance Regime: Challenges and Policies' Centre For Research on Peace and Development, CRPD Working Paper No. 71, 2018, 3 - https://soc.kuleuven.be/crpd/files/working-papers/crpd-no-71-mwabu-full.pdf on 7 November 2019.
[89] https://nationaloil.co.ke/upstream/ on 9 November 2019.
[90] https://nationaloil.co.ke/upstream/ on 9 November 2019.

recommended that the President send troops to the maritime border to protect the 'sovereignty and territorial integrity of the Republic'.[91] This adversarial approach taken by Kenya and Somalia significantly threatens the marine environment since, as established above, the marine environment cannot be effectively protected, managed and developed without the cooperation and coordination of neighbouring states.

Between 1988 and 2013, Kenya has experienced five oil spills resulting from transportation derailment. The Kabarani area incident resulted in the discharge of 68,000 litres of oil which revealed that Kenya lacks the technical capacity to respond to onshore and offshore spills related to the oil and gas industry, according to a Kenya Maritime Authority Environmental Officer.[92]

3.3.2. Legal Framework

3.3.2.1. National Contingency Plan for Marine Spills from Shipping and Offshore Installations (NOSCP)

The NOSCP was drafted in 2001 which set up the National Oil Spill Response Committee (NOSRC) thereunder that works in conjunction with the Kenya Port Authority (KPA) in curtailing and controlling pollution of the territorial waters of Kenya.[93] The plan considers three categories of potential spill incidents and outlines alternative response mechanisms:[94]

(i) Tier One – spillages of not more than 100 tonnes of oil are to be dealt with by the operators responsible;

(ii) Tier Two – this covers spillages of up to 1000 tonnes of oil that are beyond the capabilities of a single operator, thus requiring a cooperative effort engaging government agencies *i.e.* the NOSRC; and

(iii) Tier Three – recognises much larger accidental spills that cannot be addressed sans external intervention due to inadequate resources and capacities.

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[91] Shahow A.A, 'Kenya and Somalia's Maritime Dispute: One Winner, Two Losers?' https://africanarguments.org/2019/10/30/kenya-somalia-maritime-dispute-one-winner-two-losers/ on 9 November 2019.

[92] UNEP, 'Greasing the Wheels of Kenya's Nascent Oil and Gas Sector' https://www.unenvironment.org/news-and-stories/story/greasing-wheels-kenyas-nascent-oil-and-gas-sector on 10 November 2019.

[93] https://www.itopf.org/knowledge-resources/countries-territories-regions/countries/kenya/ on 6 November 2019.

[94] Definitions and Interpretations, *National Contingency Plan for Marine Spills from Shipping and Offshore Installations* (2014).

The Plan incorporates environment sensitivity mapping in identifying areas of risk, provides guidelines for shoreline clean-up and lists authorities responsible for certain tasks in an effort to streamline and coordinate the emergency response mechanism.[95] Presently, the response policy relies largely on the use of dispersants where appropriate, or manual clean-up through casual labour equipped with hand tools. However, limited stocks of dispersants and sorbents are available, and the exclusive use of dispersants may result in more harm to the environment where environment sensitivity to their use has not been conducted.[96]

In May 2018, UNEP organised a training event 'Promoting Sound Environmental Management in Oil and Gas Exploration and Production', cognisant of the lack of institutional capacity, infrastructure, finance and legal and regulatory frameworks.[97] According to UNEP, the country needs to enhance the policy framework and adopt sound environmental management measures and legislative and regulatory frameworks. Marisol Estrella, Programme Coordinator of UNEP's disaster reduction work noted that inadequate environmental safeguards pose significant threats to the environment, human health and livelihoods, particularly where oil and gas in mismanaged.[98]

3.4. Conclusion

The emergency response framework and resource capacity in the WIO region to accidental oil spills varies from state to state, with some countries lacking a framework altogether *i.e.* Somalia. Furthermore, oil response mechanisms, despite having been prompted under the Nairobi Convention, have been developed unilaterally which has led to significant differences and variances that are deleterious to regional coordination and cooperation efforts. Although the countries share common aspirations of offshore oil and gas development, economic development cannot proceed without the protection of the shared resource: the Indian ocean. An oil spill would not only harm the biodiversity in the region, it would also ruin beaches, and marine and coastal ecosystems which severely impacts the two important economic industries of tourism and fishing. Therefore, an integrated and coordinated approach seeking to protect,

[95] Section 6, *National Contingency Plan for Marine Spills from Shipping and Offshore Installations* (2014).
[96] https://www.itopf.org/knowledge-resources/countries-territories-regions/countries/kenya/ on 6 November 2019.
[97] UNEP, 'Greasing the wheels of Kenya's Nascent Oil and Gas Sector' - https://www.unenvironment.org/news-and-stories/story/greasing-wheels-kenyas-nascent-oil-and-gas-sector on 7 November 2019.
[98] UNEP, 'Greasing the wheels of Kenya's Nascent Oil and Gas Sector' - https://www.unenvironment.org/news-and-stories/story/greasing-wheels-kenyas-nascent-oil-and-gas-sector on 7 November 2019.

develop and manage the Indian ocean through marine spatial planning and cooperation between states is absolutely crucial to the future of the WIO region in conducting their coastal economic activities as well as maintaining the environment.

CHAPTER IV

4.0. Integration and Transboundary Cooperation

The WIO is one of the least ecologically exploited marine environments in the world.[99] Nonetheless, increased activity in the region has introduced several challenges including overexploitation, environmental degradation, and land-based and marine sources of pollution.[100] Due to these rapid developments, there is a prominent need for an integrated and coordinated approach in the offshore exploitation of oil and gas which is dependent upon the cooperation of states, a failure of which risks the following:[101]

(i) Inappropriate, fragmented or non-existent regulations which promotes irregular environmental protection;

(ii) Non-implementation of national and regional agreements due to weak regional and domestic state capacity; and

(iii) Self-regulation through private mechanisms that guarantee environmental degradation, since the transboundary effects of offshore oil and gas development cannot be achieved unilaterally.

Prior to the adoption and institution of the Nairobi Convention, there was no platform in place for the WIO states to conduct a dialogue on the environmental problems plaguing the region.[102] The Convention has created a forum whereby all stakeholders in the region can participate in. The Contracting Parties have an equal voice when participating in the Convention, which has initiated an open participatory process to discuss the future of the marine environment in the region.[103]

This chapter will discuss the need for an integrated and coordinated approach through marine spatial planning; which will be underpinned by an examination of the ecological, economic

[99] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 12.
[100] Martin A, 'Lessons Learned from the Nairobi Convention', 34.
[101] GDSR, 'Strengthening the international regulation of offshore oil and gas activities', 2015 - https://sustainabledevelopment.un.org/content/documents/5779Brief%20offshore%20GSDR_rev.pdf on 14 November 2019.
[102] Martin A, 'Lessons Learned from the Nairobi Convention', 41.
[103] Martin A, 'Lessons Learned from the Nairobi Convention', 40.

and social impacts of oil spills and blowouts justifying transboundary cooperation. Thereafter, a case study on the Gulf of Mexico (GoM) will be given, establishing a strong basis for an integrated approach in outlining the mistakes made leading to the escalation of the GoM blowout and environmental best practices drawn therefrom.

4.1. Ecological, Economic and Social Status of the WIO Region

4.1.1. Ecological Status

The WIO has been described as a 'biogeographic, climatic and socio-political region' covering the western part of the Indian Ocean (the eastern Africa coastline).[104] It ranges over 30 million km^2 and covers 8.1% of the global ocean surface with a combined coastline of more than 15,000 km. The WIO boasts a diverse ecological ecosystem featuring warm tropical waters, coral reefs, mangroves, sea grasses and wide sandy beaches, all of which attract tourism as a leading economic industry in the region. The total population of the region is estimated at 220 million with 60 million people living within 100 km of the shoreline.[105]

The Indian Ocean has several tangible and intangible benefits such as atmospheric regulation, carbon storage and ecosystem services including water filtration by mangroves, seagrass and wetlands.[106] According to a study by Veron et al, the WIO flaunts a high diversity of species and ecosystems, ranking as the world's second richest ocean area in marine biodiversity.[107] It's important to note, however, that there are signs of growing ecological distress owing to industrialisation and economic development through activities such as resource exploitation and development; likely to affect the natural asset base.[108]

4.1.2. Economic Status

As aforementioned, approximately 60 million people are dependent on the resources derived from the WIO. The ocean community principally depends on subsistence fishing which is difficult to quantify since a substantial proportion of small-scale fishing is retained for local consumption and traded through non-financial informal markets. Small-scale fishing is

[104] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 12.
[105] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 12.
[106] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 13.
[107] Veron et al, *The coral reef crisis: the critical importance of <350 ppm CO_2*, 2009, 1428 - 1436.
[108] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 24.

nonetheless vital to their livelihoods.[109] Fisheries form the largest asset of the WIO, contributing 40% of the natural assets.[110] Furthermore, coastal and marine tourism constitutes for the largest economic income in the region, accounting for 69% of ocean output.[111] However, according to a report by the World Wildlife Fund (WWF), the data presented pertaining to the economic value of the WIO is contentious among economists and thus merely underscores indicators of the potential value *i.e.* the existing calculations likely underestimate the value of ocean-derived benefits.[112]

Unfortunately, several ocean-dependent communities are experiencing increasing economic hardships derived from the degradation of their resource base, owing largely to mounting pressures from emerging industries in infrastructure, extractives and population growth.[113]

4.1.3. Risks Introduced to the Marine Environment by Oil and Gas Development

Even at the dawn of offshore oil and gas development, direct and indirect pressures from resource exploitation and human-induced habitat degradation have already taken their toll on the ocean ecosystem of the WIO.[114] Negative effects include the erosion of biodiversity, tourism value and shoreline protection, all of which have severe impacts on the community's well-being resulting in food insecurity and the loss of livelihoods as a consequence of coastal mismanagement.[115] This impact is chiefly attributable to the overharvesting of resources such as timber and oil tanker traffic whose ecological footprint pales in comparison to the development of oil and gas, which is much more pervasive.

The oil industry is administered through difficult, complicated and dangerous processes that augment the risks to the marine environment.[116] To put this into perspective, there were 1,550

[109] http://www.africa21.org/wp/wp-content/uploads/2017/06/Africa21-WIO.pdf on 15 November 2019.
[110] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 19.
[111] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 7.
[112] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 21.
[113] Martin A, 'Lessons Learned from the Nairobi Convention', 61.
[114] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 24.
[115] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 24.
[116] Salazar C.Q, 'Transboundary Cooperation in the Management of Oil Spills from Offshore Installations in the Gulf of Mexico Large Marine Ecosystem' Division for Ocean Affairs and the Law of the Sea, Nippon Foundation, 2013, 28 -

injuries, 60 deaths and 948 fires and explosions in the GoM between 2001 and 2010.[117] Furthermore, the occurrence of oil spills threaten the ecological conditions of the coastal and marine environment and result in, *inter alia*, habitat destruction, chemical toxicity leading to lethal and sub-lethal effects, and other ecological damage.[118] Consequently, not only is the environment significantly endangered by insufficient safeguards and mismanagement, the resident human community also suffers socio-economic harm resulting from ecological damage. Deliberate regional action is crucial to the protection of the marine environment in order to curtail the deterioration and degradation of the ocean's ecosystem. The World Wildlife Fund reiterates this urgency through a call to action, imploring WIO states to act together in taking necessary, tangible steps towards the inclusive and sustainable conservation of the marine environment in the interests of the people of the region and the environment that supports them.[119]

4.2. The Integrated and Coordinated Approach

The argument for an integrated and coordinated approach in the development of marine resources is based on a recognition of the ocean as forming the global commons as well as the risks of transboundary impact consequent in its exploitation.

Article 199 of the UNCLOS establishes that:[120]

> 'States in the area affected, in accordance with their capabilities and the competent international organisations shall cooperate, to the extent possible, in eliminating the effects of pollution and preventing or minimising the damage. To this end, States shall jointly develop and promote contingency plans for responding to pollution incidents in the marine environment'.

https://www.un.org/Depts/los/nippon/unnff_programme_home/fellows_pages/fellows_papers/quiroz_1314_mex.pdf on 10 August 2019.

[117] Bunter M, 'The BP Mississippi Canyon MC 252 1-01 (Macondo) Blow-Out in the U.S. Sector of the Gulf of Mexico: The Technical, Legal and Regulatory Issues Which Still Remain' OGEL, 2012, 24.

[118] Yusuf Y.M, 'Environmental Problems Associated with Offshore Oil and Gas Activities', 11.

[119] World Wildlife Fund, *Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future*, 2017, 8.

[120] Article 199, *United Nations Convention on the Law of the Sea*, 10 December 1982, 1833 UNTS.

This is reiterated in article 12 of the Nairobi Convention coupled with article 15 that call for cooperation in combatting pollution in cases of emergency and scientific and technical cooperation of the Contracting Parties in the exchange of data respectively.[121]

4.2.1. The Principle of Integration

There is considerable global support for the integration and coordination of states in the management of the ocean and its resources.[122] The principle of integration is a legal and political concept seeking to harmonise different policies and regulatory frameworks governing marine activities such as oil and gas development.[123] Integration and coordination thus promotes the holistic development of common objectives, programs and measures that are harmonised to regional policies.[124]

Sustainable development is the overarching principle of integrated coastal management striving for sustainability, the reduced vulnerability of the coastal communities to emergencies and hazards, and the maintenance of ecological processes.[125] According to Bailet, ocean governance requires horizontal integration necessitating the multi-sectoral participation of government, private sector, scientists, NGOs *etc*; and vertical integration across all levels of governance through reciprocal collaboration and coordination.[126] A UNEP regional seas study reveals that the integrated coastal zone management approach in several marine environments has led to more effective mechanisms in the protection of the marine environment from emerging pressures.[127] Conversely, policies and frameworks applied unilaterally have proved inefficient, as they fail to account for the transboundary nature of marine resources and ignore

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[121] Article 12 and Article 15, *The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean* (2010).

[122] Juda L, 'Changing National Approaches to Ocean Governance: The United States, Canada, and Australia' 34 *Ocean Development & International Law* 2, 2003, 161 - 163.

[123] Salazar C.Q, 'Transboundary Cooperation in the Management of Oil Spills from Offshore Installations in the Gulf of Mexico Large Marine Ecosystem', 37.

[124] Salazar C.Q, 'Transboundary Cooperation in the Management of Oil Spills from Offshore Installations in the Gulf of Mexico Large Marine Ecosystem', 37.

[125] Islam S.M, 'A Critical Analysis of Integrated Coastal and Ocean Management in Bangladesh with Lessons from Global Practices' Published Dissertation, World Maritime University, Malmö, 2015, 9.

[126] International Ocean Institute, 'Ocean Governance: Towards an Oceanic Circle' - https://www.un.org/depts/los/convention_agreements/convention_20years/presentation_ocean_governance_frbailet.pdf 0n 14 November 2019.

[127]UN Regional Seas Reports and Studies, *Marine Spatial Planning and Integrated Coastal Zone Management Approaches to Support the Achievement of Sustainable Development Goal Targets 14.1 and 14.2*, 2018 - https://wedocs.unep.org/bitstream/handle/20.500.11822/26440/MSP_ICZM_Guidelines.pdf?sequence=1&isAllowed=y on 14 November 2019.

the necessity of the multi-sectoral and intergovernmental management of the marine environment.[128]

4.3. Case Study: Lessons Learned from the Gulf of Mexico Blow-Out, 2010

> '*From the moment a drill bit penetrates the reservoir, a race is on to ensure that blowout – a surge of oil and gas up the well bore – won't occur'.*[129]

On 20th April 2010, there was an explosion on the *Deepwater Horizon* oil rig (Macondo Well) reportedly caused by well integrity failure.[130] A failure of the blowout preventer[131] resulted in a series of explosions on the rig due to the lack of control and a failure in the containment of hydrocarbons. Despite several unsuccessful efforts to maintain well control, approximately 5 million barrels of oil leaked out in the accident in the period of 3 months.[132] The blowout's immediate impact resulted in death of 11 workers and serious injury to 16 others. Furthermore, the *Deepwater Horizon* rig sank 36 hours after the initiating incident, and an estimated 2 million barrels remained in the deep sea.[133] Long term effects included huge economic losses to both the United States and Mexico which were connected to tourism, fisheries and recreational activities, as well as some health effects leading to illness.[134]

The scale and scope of the impact remains a contentious matter with several conflicting reports on the same.[135] According to BP, 1,000 miles of shoreline had been affected, out of which 200 miles was heavily oiled. The survey revealed that only 10% of the oil reached the shoreline.[136] These results were confirmed by the National Oceanic Atmospheric Agency (NOAA).

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[128] The GoM blowout, discussed in greater detail below, is illustrative of the risks of the deregulation of the oil industry and unilateral efforts.

[129] Borchardt J.K, 'Avoiding the Blowout' 132 *Mechanical Engineering 8*, 2010.

[130] Bunter M, 'The BP Mississippi Canyon MC 252 1-01 (Macondo) Blow-Out in the U.S. Sector of the Gulf of Mexico: The Technical, Legal and Regulatory Issues Which Still Remain' OGEL, 2012, 3 - 11.

[131] A device that automatically seals the well where a loss of control in the pressure of fluids is experienced.

[132] Bunter M, 'The BP Mississippi Canyon MC 252 1-01 (Macondo) Blow-Out in the U.S. Sector of the Gulf of Mexico: The Technical, Legal and Regulatory Issues Which Still Remain' OGEL, 2012, 24.

[133] McNutt et al, 'Review of flow rate estimates of the Deepwater Horizon oil spill' 109 *Proceedings of the National Academy of Sciences of the United States of America* 50, 2012, 20260.

[134] Salazar C.Q, 'Transboundary Cooperation in the Management of Oil Spills from Offshore Installations in the Gulf of Mexico Large Marine Ecosystem', 28.

[135] Bryant B, 'Deepwater Horizon and the Gulf Oil Spill – the Key Questions Answered' - https://www.theguardian.com/environment/2011/apr/20/deepwater-horizon-key-questions-answered on 3 November 2019.

[136] Bryant B, 'Deepwater Horizon and the Gulf Oil Spill – the Key Questions Answered' - https://www.theguardian.com/environment/2011/apr/20/deepwater-horizon-key-questions-answered on 3 November 2019.

Alternatively, research conducted by Samantha Joye discovered that an area of 2,900 square miles of deep water was covered in a thick coating of oil.[137] BP was accused of downplaying the severity of the leak when an internal company document indicated a worst-case assessment that was 20 times worse than the data released to the public.[138] Despite the conflicting reports, the incident exposed that the regulatory regime was outdated and ill-equipped to oversee oil spills of the magnitude and complexity of the *Deepwater Horizon* disaster.[139]

It has been posited that the GoM blowout was the inevitable result of the deregulation of the oil industry.[140] In the GPO Oil Commission's report (Commission), a finding was made indicating that the actions, policies and procedures of the corporations involved did not provide an effective safety system approach commensurate with the risks of the Macondo well.[141] The Commission further observed that the ability of the oil and gas industry to perform integrated assessments is impacted by the complexity and technicality of the offshore oil and gas industry; contending that the regulatory regime was ineffective in addressing the risks of the Macondo well.[142] Essentially, the industry's disproportionate focus on exploration and production with little regard for environmental sustainability significantly hampered control measures. According to industry officials in the Commission, the regime failed to reflect best industry practices and instead were indicative of the 'lowest common denominator'.[143] The American regime has been criticised for operating under a rules-based system instead of a principles-based system which makes it rigid and difficult to anticipate emerging challenges in a rapidly developing industry.[144] It is important to note that the regulatory regime, at the time of the

[137] Joye S, 'The Gulf of Mexico Ecosystem: Microbial and biogeochemical dynamics revealed in the aftermath of the *Deepwater Horizon* blowout' - https://www.mpi-bremen.de/en/SAMANTHA-JOYE-The-Gulf-of-Mexico-Ecosystem-Microbial-and-biogeochemical-dynamics-revealed-in-the-aftermath-of-the-Deepwater-Horizon-oil-blowout.html on 10 November 2019.

[138] Bryant B, 'Deepwater Horizon and the Gulf Oil Spill – the Key Questions Answered' - https://www.theguardian.com/environment/2011/apr/20/deepwater-horizon-key-questions-answered on 3 November 2019.

[139] National Commission on the BP Deepwater Horizon Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, 2011, 264.

[140] National Commission on the BP Deepwater Horizon Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, 2011, see generally.

[141] National Commission on the BP Deepwater Horizon Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, 2011, 267.

[142] National Academy of Engineering and National Research Council, *Macondo Well Deepwater Horizon Blowout: Lessons for Improving Offshore Drilling Safety*, National Academies Press, Washington D.C., 2012, 7.

[143] Bunter M, 'The BP Mississippi Canyon MC 252 1-01 (Macondo) Blow-Out in the U.S. Sector of the Gulf of Mexico: The Technical, Legal and Regulatory Issues Which Still Remain' OGEL, 2012, 34.

[144] Bunter M, 'The BP Mississippi Canyon MC 252 1-01 (Macondo) Blow-Out in the U.S. Sector of the Gulf of Mexico: The Technical, Legal and Regulatory Issues Which Still Remain' OGEL, 2012, 35.

blowout, was applied unilaterally and there was no regional framework governing oil and gas in the GoM region *i.e.* the U.S., Mexico and Cuba.

4.4. Conclusion

Transboundary natural resources are determined by two main elements:

(i) Multiple states have access to the same resources; and

(ii) The activities conducted are interconnected and bear an impact on the ability of other states to use the resources.[145]

This was identified in the *Trail Smelter* case which determined the baseline approach to transboundary pollution.[146] The GoM Blowout highlighted the interconnection between ecological and socio-economic characteristics of a shared ecosystem, affirming the mutual web of dependencies in economic, cultural and social aspects. Granted that the impact of the blowout was most severely experienced in the U.S., a transboundary impact nonetheless existed and was aggravated further by poor regulatory mechanisms. A shared interest in the GoM between the U.S. and Mexico in oil and gas extraction continues to demand for integrated sustainable development initiatives through holistic approaches.[147] In relation to the foregoing, there is an increased necessity for alleviating stress on the ocean ecosystem as an important ecological and economic source for the surrounding communities. Although the GoM blowout concerns primarily two states – whereas the WIO region encompasses 10 countries – the drastic escalation of the incident was symptomatic of poor integration efforts. It is, therefore, important that states in the WIO harmonise their policies at the regional level and establish national rules, standards and procedures to effectively manage marine pollution.

[145] Muigua K, 'Managing Transboundary Resources in Kenya' KMCO, 2018, 2.
[146] *United States of America v Canada* (1905), Arbitration Tribunal.
[147] Bunter M, 'The BP Mississippi Canyon MC 252 1-01 (Macondo) Blow-Out in the U.S. Sector of the Gulf of Mexico: The Technical, Legal and Regulatory Issues Which Still Remain' OGEL, 2012, 38.

CHAPTER V

5.0. Conclusion and Recommendations

5.1. Summary of Findings

The purpose of this paper has been to entrench regional integration and coordination in the management of accidental oil spills from offshore oil and gas installations. It has shown the transboundary impact of oil spills whether from transportation mishaps or deep-water accidents, illustrating thereof the need for a cogent iron-clad regulatory framework governing offshore oil and gas development. Since offshore oil and gas development is at its infancy, this dissertation is prospective and seeks to take preventative action in avoiding reactive responses that will certainly be deleterious to the environment, coastal communities and state economies.

Chapter two submits the theoretical framework undertaken in this research of *steady state economics*, proposing the need for environmental sustainability and safeguards in economic development. It rejects the idea that a trade-off between the two must occur for there to be significant economic growth, and instead argues that such an arrangement only promotes short-term development culminating in the overexploitation and depletion of resources and ultimate degradation of the environment.

Chapter three explored the existing regional and national regulatory frameworks governing emergency preparedness in the event of accidental oil spills in offshore installations. One main challenge was highlighted thereunder: (i) a failure to translate regional obligation into national policy. The main proposition was that the Nairobi Convention, as a soft law instrument, fails to attach binding obligations on states to develop their laws in accordance with the Convention. Furthermore, institutional incapacity and the nonalignment of inter-agency and intergovernmental responsibilities in the event of a major oil spill aggravate and heighten the destructive capacity of such an incident.

Chapter four qualifies that the integrated and coordinated coastal zone management approach is necessary for regulatory safeguards to be successful; asserting that unilateral management is ineffective using *Deepwater Horizon* as a case study. As demonstrated in *Deepwater Horizon*, although deep-water oil spills are often inevitable consequences of the exploration and

production process, poor regulatory structures and mechanisms tend to escalate the scale and severity of the spill making it more difficult to contain and control.

5.2. Conclusion

This paper acknowledges the WIO's present regional and institutional incapacity to cope with a spill/blowout in deep water due to insufficient safeguards and deviations from and/or non-compliance with the Nairobi Convention. The paper urges the Contracting Parties to the Convention to hold discussions seeking to ensure and monitor compliance, enhance state commitments, revive the Regional Coordinating Unit, and elaborate environmental protections through specialised texts.

5.3. Recommendations

5.3.1. Enhancing National and Institutional Capacity

As established in Chapter III, the translation and adoption of the Convention provisions at the national state level has been done unilaterally, failing to consider multi-sectoral and intergovernmental responsibilities in containing and controlling accidental oil spills. Cognisant of the challenges of harmonisation and coordination among multiple sovereign states, the Nairobi Convention was adopted to obviate barriers in cooperation and enhance regional integration. Nonetheless, non-compliance and/or deviations from the text of the Nairobi Convention have been noted in the legal inconsistencies and regulatory gaps recorded. For example, this has been observed in the failure to necessitate comprehensive environment sensitivity mapping tools, information exchange mechanisms *etc*. Although there are several factors attributable to this, the dissertation highlights the need for a binding 'hard law' instrument to bolster regional obligation and compliance, mindful of the Convention's limited enforceability as a soft law instrument.

Hard law refers to legally binding obligations arising from the *legalisation* of agreements and instruments.[148] Prosper Weil pioneers for hard law, arguing that the increasing use of soft law

[148] Abbot K.W and Snidal D, 'Hard and Soft Law in International Governance' 54 *International Organisation* 3, 2000, 421.

'might destabilise the whole international normative system and turn it into an instrument that can no longer serve its purpose'.[149] This is because soft law does not establish consequences for legal violations which removes a crucial deterrent to any deviations from the law. As posited by Thomas Franck, legal obligations are considered to carry significant legitimacy which creates an independent 'compliance pull'.[150] Legalisation demands for reasonable justification through applicable rules and facts, effectively disqualifying arguments based on prejudiced interpretations, interests and preferences.[151] Binding instruments further develop the credibility of commitment, with most legal arrangements including centralised monitoring mechanisms in detecting non-compliance.[152] Notably, the Nairobi Convention has made attempts at establishing a centralised institutional structure – the Regional Coordinating Unit – which has been eroded by inadequate monitoring and assessment and poor state commitments.[153] Furthermore, decentralised mechanisms *i.e.* the National Oil Spill Contingency Plans have not fully been adopted and integrated into national policy; which is worsened by the lack of inter-agency and intergovernmental cooperation and coordination both at the national and regional level.[154] Due to the environmental externalities accruing from oil and gas development, hard legal commitments ensure certainty and assurance in cogent regulatory frameworks where soft law documents do not.[155]

5.3.2. The Ecosystem-Based Management (EBM) Approach

The EBM approach builds upon integrated coastal zone management in pursuing a balance between economic ambitions by stakeholders and effective governance measures applied to natural systems and human activities.[156] Chapter IV has explored marine environments and coastal activities, drawing a correlation between the two that cements their interconnectedness and transboundary nature; ergo making regional integration and coordination an inalienable feature of offshore oil and gas management.

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[149] Weil P, 'Towards Relative Normativity in International Law?' 77 *American Journal of International Law* 3, 1983, 423.
[150] Franck T, *The Power of Legitimacy Among Nations*, 1 ed, Oxford University Press, Oxford, 1990.
[151] Abbot K.W and Snidal D, 'Hard and Soft Law in International Governance' 54 *International Organisation* 3, 2000, 429.
[152] Abbot K.W and Snidal D, 'Hard and Soft Law in International Governance' 54 *International Organisation* 3, 2000, 429.
[153] Martin A, 'Lessons Learned from the Nairobi Convention', 54.
[154] Martin A, 'Lessons Learned from the Nairobi Convention', 55.
[155] Abbot K.W and Snidal D, 'Hard and Soft Law in International Governance' 54 *International Organisation* 3, 2000, 429.
[156] Salazar C.Q, 'Transboundary Cooperation in the Management of Oil Spills from Offshore Installations in the Gulf of Mexico Large Marine Ecosystem', 18.

The implementation of EBM encompasses the restoration and sustenance of the ecosystem and are instrumental in the rehabilitation and recovery of depleted marine resources. Emergency response mechanisms to offshore spills should therefore be targeted towards EBM strategies in the restoration of marine environments. The WIO Contracting Parties should develop integrated regulatory structures reflecting this in curtailing oil spills and blowouts of the magnitude and scale of the GoM incident.

5.4. Testing Hypothesis

4. **For the Amended Nairobi Convention to be efficient and enforceable, active steps towards the translation and adoption of regional obligations into national policy is necessary in curtailing the environmental degradation of the marine environment.**

This dissertation confirms that the failure to translate and adopt regional obligations into national policy impacts upon the implementation and enforcement of regional rules since the Nairobi Convention requires elaboration in national regulatory frameworks.

5. **The ocean, in forming the global commons, requires a coordinated and integrated approach in its exploitation of natural resources for the mitigation of the impact of accidental blowouts to be successful.**

This hypothesis is proved hereunder following an extensive review of literature and drawing from lessons in the Gulf of Mexico. It has been illustrated that the ocean requires a coordinated and integrated approach in its exploitation of natural resources for the mitigation and containment of the impact of accidental blowouts to be successful.

6. **The voluntary nature of the Amended Nairobi Convention is deleterious to the enforcement of measures thereunder, which is aggravated by a failure to translate these obligations into national policy. There is a need to transform the Convention into a binding document to enhance greater compliance.**

From the foregoing, this paper proves its third hypothesis and strongly contends that converting the Nairobi Convention into a binding regional instrument will enhance regional cooperation and compliance.

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