SHARING OF TRANSBOUNDARY RESOURCES: AN ANALYSIS OF JOINT DEVELOPMENT OPTIONS FOR TRANSBOUNDRY HYDROCARBON RESOURCES BETWEEN KENYA AND SOMALIA

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United Nations – The Nippon Foundation of Japan Fellowship Programme 2022

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The views expressed herein are those of the author and do not reflect the views of the Government of Kenya, the United Nations, the Nippon Foundation of Japan, The Netherlands Institute of Law of the Sea and Utrecht University.

Abstract

Natural resources, mainly hydrocarbons, play a crucial role in maritime delimitation. UNCLOS stipulates provisional arrangements for exploring and exploiting hydrocarbons in overlapping maritime areas. Practical and legal challenges arise when transboundary hydrocarbon reservoirs are discovered. Joint development agreements and transboundary unitization agreements are legal solutions. However, complications arise when neighbouring coastal states are unwilling to cooperate in managing transboundary hydrocarbons. Risks of uncontrolled drilling that may increase pollution of the marine environment rise.

Mistrust between the coastal states can escalate and jeopardize other cooperation sectors, jeopardizing regional cooperation. Joint development of transboundary hydrocarbons promotes regional cooperation between states sharing the resources. State practice on the unitization of transboundary hydrocarbons can help parties make a sound decision without destroying their good neighbourhood. This research focuses on transboundary hydrocarbons between Kenya and Somalia and how the two states can jointly develop them.

Key Words: - agreements, continental shelf, duty to cooperate, marine environment, joint development, joint development agreement, hydrocarbons, maritime boundary, maritime delimitation, pollution, straddle, transboundary reservoirs, unitisation, zones.

Acknowledgments

This research paper was made possible thanks to the United Nations - The Nippon Foundation of Japan Fellowship Programme on the Law of the Sea. I express my sincere gratitude to the Nippon Foundation, for providing the necessary financial support to complete this work and giving me this this opportunity to contribute to my country's development.

My deepest heartfelt gratitude goes to Ms. Valentina Germani, Senior Legal Officer and Vanessa Arellano Rodriguez, Associate Legal officer, Division of Legal Affairs for your continuous support and valuable advice since the beginning of the programme. My heartful thanks extends to the staff of the Division for Oceans Affairs and the Law of the Sea of the United Nations (DOALOS) for the kind assistance given during the programme.

I wish to express my deepest gratitude and appreciation to Professor Alex G. Oude Elferink Director of the Netherlands Institute for the Law of the Sea (NILOS), School of Law, Utrecht University for the helpful and kind support received during the preparation of this research paper. My deepest thanks go to Dr. Catherine Blanchard for your helpful comments and recommendations. I also wish to thank members of staff of the Netherlands Institute for the Law of the Sea (NILOS) for their guidance and cooperation and members of staff at the International Office for helping me settle in the Netherlands.

My special thanks goes to the Office of the Attorney General and Department of Justice, the Republic of Kenya for releasing me for this nine month period. I extent my special thanks to the former Attorney General, Retired Justice Kihara Kariuki for nominating me. I must also thank Pauline Mcharo, Head, Legal Advisory and Research Division for the support granted before and during the fellowship. I also extent my gratitude to the staff of the Kenya International Boundaries Office (KIBO) for the support granted by providing me with relevant materials necessary for completion of this research.

Finally, being away from home is the most challenging part of this period. I thank my family for their extended support and cooperation during the entire period of my fellowship.

List of Acronyms

1.	AIMS	African Integrated Maritime Strategy
2.	AU	African Union
3.	CBD	Convention of Biological Diversity
4.	CGPCS	Contact Group on Piracy off the Coast of Somalia
5.	CLCS	Commission on the outer limit of the continental shelf
6.	EEZ	Exclusive Economic Zone
7.	JDA	Joint Development Agreement
8.	JDZ	Joint Development Zone
9.	ICJ	International Court of Justice
10.	ILC	International Law Commission
11.	IMB PRC	International Maritime Bureau Piracy Reporting Centre
12.	IMO	International Maritime Authority
13.	ISA	International Seabed Authority
14.	ITLOS	International Tribunal for Law of the Sea
15.	IUU	Illegal Unregulated Unlicenced
16.	MARPOL	International Convention for the Prevention of Pollution from Ships
17.	MPA	Marine Protected Area
18.	PSA	Production Sharing Agreement
19.	PSC	Production Sharing Contract
20.	ReMISC	Regional Maritime Information Sharing Centre
21.	RECs	Regional Economic Communities
22.	RMRCC	Regional Maritime Rescue Coordination Centre
23.	SOLAS	Safety of Life at Sea
24.	TBMPA	Transboundary Marine Protected Area
25.	UA	Unitisation Agreement
26.	UN	United Nations
27.	UNCED	United Nations Convention on Environment and Development
28.	UNCLOS	United Nations Convention on Law of the Sea
29.	UNFCCC	United Nations Framework Convention on Climate Change
30.	UNEP	United Nations Environmental Programme

31. UNGA	United Nations General Assembly
32. UNODC	United Nations Office on Drug Abuse
33. UNSC	United Nations Security Council
34. WIO	West Indian Ocean
35. VCLT	Vienna Convention on Law of Treaties

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14. United Nations Convention on Environment and Development, Rio 1992
15. United Nations Fish Stock Agreement
16. Vienna Convention on the Law of Treaties, Vienna, 23 May 1969, EIF: 27 January 1980 governs the interpretation of treaties, an international instrument governing interpretation on treaties.
17. 1947 Statute of the International Law Commission Article 23.
18. Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa
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INTRODUCTION

The United Nations Convention on Law of the Sea (UNCLOS) establishes a framework for addressing the use of ocean space. It represents codification of rules of international law and customary law on ocean affairs. States derive economic benefits from the ocean, particularly the territorial sea, continental shelf and EEZ.[1] Ocean activities like tourism and culture, shipping, fisheries, and exploitation of hydrocarbons and other minerals from the seabed undertaken in the territorial sea, EEZ and continental shelf support the economy of several coastal states.[2] Unlike tourism and culture, which are often undertaken in the internal waters and territorial sea and hence easily regulated by national laws, shipping, fisheries, seabed and subsoil mineral resources often require collaborated international regulation.

In the territorial sea, other states enjoy the right of innocent passage to traverse the sea without entering internal waters and to enter internal waters.[3] In the EEZ, coastal states have a right to explore, exploit and manage living and non-living resources and jurisdiction over the establishment of artificial islands, installations and platforms, scientific research and the marine environment.[4] In the continental shelf, states have the exclusive sovereign right to exploit living and non-living resources of the continental shelf.[5] The continental shelf comprises non-living resources, namely hydrocarbons, minerals, and living organisms belonging to sedimentary species. Natural resources can be immobile or mobile and harvestable.[6] The sovereign rights of the

[1] United Nations Convention on Law of the Sea, Montego Bay, 10 December 1982: 16 November 1994

[2]First global integrated marine assessment report available on https://www.un.org/regularprocess/content/first-world-ocean-assessment#:~:text=The%20First%20Global%20Integrated%20Marine%20Assessment%2C%20also%20known,State%20of%20the%20Marine%20Environment%2C%20including%20Socioeconomic%20Aspects assessed on 25.7.2022 at 3.45pm

[3] Article 18 of UNCLOS

[4] Article 56 of UNCLOS

[5] Article 77 of UNCLOS

[6] Blake, Gerald Henry. *The peaceful management of transboundary resources* / editors, Gerald H. Blake ... [et al.] Graham & Trotman/Martinus Nijhoff London; Boston 1995

continental shelf do not affect the legal status of the superjacent waters and are subject to other states' navigation rights.[7]

Migratory resources like fisheries and hydrocarbons do not recognize boundary lines and hence straddle between neighbouring states. Highly migratory fish stock breed, feed and live in different maritime zones depending on the seasons. Hydrocarbon resources may straddle beyond one reservoir and across the maritime boundary. The fluid nature of hydrocarbons makes them migrate through rocks across the contract area and sometimes the maritime boundary. Unlike straddling fish stock, which is extensively regulated, there are no international rules on the exploitation of transboundary hydrocarbons that straddle across the international boundary two or more states.[8] Legal and technical challenges arise when transboundary hydrocarbon reservoirs lie across the maritime boundary of two or more states.

A range of technical, legal, and political issues arise when there are proven or suspected offshore oil and gas resources that either straddle an already established maritime boundary between States or lie within an area of overlapping maritime claims. In overlapping maritime areas, proven or suspected hydrocarbon reservoirs have stalled maritime delimitation negotiations leading to maritime delimitation cases. When a maritime boundary exists, challenges arise when either of the states is unwilling to relinquish its sovereign rights over the continental shelf. States feel that sovereignty over the continental shelf grants them the right to exploit a transboundary hydrocarbon reservoir from its side of the maritime boundary without informing a neighbouring state.

The legal challenge in developing a transboundary reservoir is whether it's nature creates an obligation to cooperate and the extent to which neighbouring states can cooperate with respect to the development of a hydrocarbon reservoir lying across the boundary of the two states. Further, due to the application of different national legal regimes on the transboundary reservoir, risks of competitive drilling by two or more contractors over the same reservoir is against the generally acceptable international practice on upstream petroleum activities. According to different scholars

[7] Article 78 of UNCLOS

[8] The Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks

and international law practitioners, the legal solution to these practical, and technical challenge is for the two states to enter cooperative arrangements inform of JDAs to exploit the transboundary reservoirs straddling their maritime limits.[9] Therefore, when a maritime boundary is already delimited and there is proven evidence that the oil and gas reservoir straddles the maritime boundary, states can enter into cooperative arrangements to avert technical and legal challenges arising from transboundary reservoirs beyond their maritime limits.

Maritime limits enable coastal states to ascertain the presence of a transboundary hydrocarbon extending beyond their jurisdiction. Maritime delimitation determines the limits of a coastal state's sovereign rights and jurisdiction.[10] JDAs are vital for developing transboundary reservoirs without jeopardising the rights of a neighbouring state over shared resources of the continental shelf. Under international law, JDAs have been used as legal solutions to this practical challenge. Existing state practice on transboundary natural resources informs the legal basis for joint management of a straddling reservoir. The straddling reservoir can be partially or wholly exploited from either side of the maritime boundary to the disadvantage of one state. The ideal strategy is to exploit the transboundary reservoir in a coordinated and joint manner. The main purpose of joint development arrangements especially unitisation agreements is to ensure sufficient and sustainable production and reduce wastage from competitive drilling due to the nature of the transboundary hydrocarbons.

Competitive drilling occurs when two or more contractors develop one reservoir. Due to the nature of hydrocarbons, a reservoir should not be drilled more than once because it jeopardises the amount

[9] Bastida, Ana E., et al. "Cross-border unitization and joint development agreements: an international law perspective." Hous. J. Int'l L. 29 (2006): 355. See also Bankes, N. (2019). "Chapter 5: Managing environmental risks through the terms of maritime delimitation and related agreements". In Managing the Risk of Offshore Oil and Gas Accidents. Cheltenham, UK: Edward Elgar Publishing; Martin-Nagle, R. (2016). *Transboundary Offshore Aquifers, Brill Research Perspectives in International Water Law,* 1(2), 1-79. doi: https://doi.org/10.1163/23529369-12340002

[10] Territorial sea of 12 nautical miles from the baselines, EEZ of 200 nautical miles from the baselines and the continental shelf of 200 nautical miles and outer limit of the continental shelf of not more than 350 nautical miles from the baselines. A coastal state must make submissions to the commission on the outer limit of the continental shelf. The commission on the outer limit of the continental shelf determines whether a state is entitled to the outer limit of the continental shelf. If the SCLS approves a state's submission for the outer limit of the continental shelf, then the state will delineate the continental shelf to the limit of 250 nautical miles.

of petroleum recouped. Competitive drilling leads to abandonment and decommissioning of the petroleum field before all the oil and gas has been exhausted. Unlike national jurisdiction where states control activities of contractors, in transboundary reservoirs, especially when there is severance of diplomatic relationships, states may not agree on unified guidelines as each contractor competes to recoup as much oil and gas as possible.[11] In addition, the colossal capital needed in developing deep-water offshore fields discourages contractors from drilling a similar field. For contractors to agree on unitisation, the respective states must set up a conducive legal environment for cooperation to thrive. States cooperate by entering into joint development agreements which enable contractors to unitise transboundary reservoirs.

Joint Development Agreements are arrangements between two or more states for the exploration and exploitation of living and non-living resources (fisheries and hydrocarbons) straddling the maritime boundary or located in overlapping claims.[12] The joint development of transboundary resources in maritime areas constitutes one of the major trends of international practice in the law of the sea.[13] It goes back to the 1950s, and to date, besides an ever-increasing number of unitization

[11] Ibid 9

[12] Vasco Becker-Weinberg, *Theory, and practice of joint development in international law, in: Cooperation and Development in the South China Sea*, edited by Zhiguo Gao, Yu Jia, Haiwen Zhang and Jilu Wu (China Democracy and Legal System Publishing House: Beijing, 2013), p. 85. Vasco Becker-Weinberg defines joint development agreements as self-regulating conventional instruments subject to international law, signed between two or more States holders of a legal title, although independent of such rights as claimed by the intervening States, concerning the maritime areas where natural resources are found in the seabed and marine subsoil, as well as undertaking of all activities deemed necessary without foregoing the rights and freedoms of third States granted under international law.

[13] After a review of the main developments in the law and practice of maritime boundary-making between 1990 and 2004, D. Anderson counts eight "general tendencies or current trends" in that field: the "trend towards a consistent approach and methodology", the "trend towards single maritime boundaries", the "trend towards accurate application of the rules on baselines, islands, low-tide elevations, etc.", the "trend towards unification of customary and conventional law", the "trend towards harmonization between the different zones", the "growing interest in the continental shelf beyond 200 nm.", the "trend towards making interim arrangements" and the "trend towards use of technical experts, geodesics and computing"; see David Colson, "Developments in Maritime Law and Practice", in David A Colson and Robert W. Smith, eds., International Maritime Boundaries, Vol. V (Leiden/Boston: Martinus Nijhoff Publishers), 3199-3222

agreements, there are at least twenty cases of other well-known joint development agreements around the world.[14] Ian Gault, defines Joint Development to mean

> *"A decision by one or more countries to pool any rights they may have over a given area and, to a greater or lesser degree, undertake some form of joint management for the purposes of exploring and exploiting offshore minerals"*[15]

One or more states pool any rights that they have over a shared area or undertake joint management for purposes of exploring and exploiting offshore non-living resources.[16] Coastal states cooperate in the management, conservation, exploration and exploitation of shared hydrocarbon deposits, fields or accumulation of non-living resources that either extend the maritime boundary or lie in areas of overlapping claims.[17] Neighbouring states can jointly develop and explore hydrocarbon deposits discovered before boundary delimitation[18] and shared hydrocarbon deposits.[19]

Rainer Logani broadens the definition of joint development to include unitisation agreements as follows: -

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[14] The most recent and accurate chronological list of these agreements is proposed by Gao Jianjun, with twelve agreements and bibliographical references as regards a category of joint development: joint development pending maritime delimitation; see his above-mentioned article, at pages 43(in particular his footnote 18) and 59. Goa gives further information about two (or three) other categories of joint development agreements his paper doesn't take into account: joint development agreements that are part of a delimitation agreement, and joint development agreements established after delimitation "due to the existence of boundary-straddling deposits" he refers to as "transboundary unitization" (see pages 41-42of his paper).

[15] Ian Townsend Gault, *Joint Development of Offshore Mineral Resources - Progress and Prospects for the Future,* Natural Resources Forum @ United Nations, New York, 1988

[16] John Abrahamson, *Joint Development of Offshore Oil and Gas Resources in the Arctic Ocean Region and the United Nations Convention on the Law of the Sea*, Brill, 2013.

[17] Ibid note 5

[18] Agreement Concerning the Delimitation of the Continental Shelf in the Persian Gulf between the Shaykhdom of Bahrain and the Kingdom of Arabia, Riyadh 22 February 1958, ST/LEG/SER.B/16, supra note 31, at 409.

[19] Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway Relating to the Delimitation of the Continental Shelf Between the Two Countries, London 10 March 1965,

"*Cooperation between states with regard to the exploration for and exploitation of certain deposits, fields, or accumulations of non-living resources which either extend beyond the boundary or lie in areas of overlapping claims*".

Unitization agreements envisage the preservation and development of an identified hydrocarbon deposit as a single unit.[20]

Research Problem

Somalia is located on the East Coast of Africa between latitudes 12°00' N and 1°40' S, and longitudes 41°00' and 51°25' E. Kenya is located on the East Coast of Africa to the southwest of Somalia between latitudes 5º 30' N and 4º 41' S, and longitudes 33º 59' E and 41º55' E. Kenya and Somalia are East African coastal states sharing a maritime boundary in the South West Indian Ocean and border the insular west Indian states. (Figure 1).[21] The ICJ delimited the territorial sea, the EEZ, the Continental shelf within 200 nautical miles and the continental shelf beyond 200 nautical miles. [22]

Seismic data reports from offshore hydrocarbon explorations on the East African Coast showed high hydrocarbon possibility potential in the Lamu basin deep-water fold-and-thrust belt. The discovery of offshore hydrocarbons in the Mozambique basin in North-Eastern Mozambique activated exploration activities for hydrocarbon resources off the coast of East Africa and insular WIO island states.[23] The Lamu Basin deep-water fold-and-thrust belt extends NE into Somalia and

[20] In Vasco Becker-Weinberg, *Joint Development of Hydrocarbon Deposits in the Law of the Sea,* Hamburg Studies on Maritime Affairs (HAMBURG, volume 30), (2014), Unitization agreements when signed between States provide the legal framework for the development of identified offshore hydrocarbon deposits and often constitute an umbrella under which other intricate legal relations will be established.

[21] Maritime Delimitation in the Indian Ocean (Kenya/Somalia)

[22] In October 2021, the ICJ delivered its Judgement on the delimitation of maritime boundary in the Indian Ocean (Kenya/Somalia)

[23] Kenya has drilled https://nationaloil.co.ke/upstream/

SE into Tanzania, joining the Mozambique basin.[24] The Lamu Basin enters the Juba deep Basin in the Northern part of Kenya and the Southern part of Somalia's maritime boundary.[25]

Early seismic studies confirmed hydrocarbon presence near the Kenya Somalia boarder with two offshore petroleum blocks straddling the equidistance line. Both. Kenya and Somalia are undertaking exploration activities on their maritime areas. Kenya granted a permit to ENI energy who are undertaking exploration activities for hydrocarbons to the limit of the maritime boundary. On the other hand, Somalia recently signed a production sharing agreement and is in the process of commencing exploration activities in its maritime boundary.

The existing research question is whether Kenya and Somalia can jointly explore and exploit the transboundary hydrocarbons straddling the maritime boundary. This study will explore different models of cooperation and recommend ideal model of cooperation that Kenya and Somalia can use to explore the straddling reservoirs

This study seeks to assess the extent to which Kenya and Somalia can cooperate in developing transboundary hydrocarbon reservoirs straddling the maritime boundary and the benefits of such cooperation arrangements.

Research Methodology and limitations

This research will apply a doctrinal research approach by examining existing sources of law from a positivist perspective. Positivist perspective considers international law to be a product of recognised law making processes which requires states to give consent to be bound by international

[24] Dennis O. John G. Maurice K. Erick N. Delineation of Subsurface Structures Using Gravity Data of the Shallow Offshore, Lamu Basin, Kenya Hindawi International Journal of Geophysics Volume 2022 available on https://reader.elsevier.com/reader/sd/pii/S1876380413600762?token=1A6BC2ED3B158A8CDC717CC9C1A77687B09C16BDA4A58A4AE90586474B2FA4D06AF7A3A149E9945D2B9E3CE6759B0CC1&originRegion=eu-west-1&originCreation=20220804123747 accessed on 8.4.2022 at 2.38pm.

[25] Davidson L. M. Arthur T. J. Smith G. F. & Tubb S. Geology and hydrocarbon potential of offshore SE Somalia (2017) Tectonics and petroleum systems of East Africa Petroleum Geoscience Vol. 24 | 2018 | pp. 247–257 available on https://pubs.geoscienceworld.org/pg/article-abstract/24/3/247/520498/Geology-and-hydrocarbon-potential-of-offshore-SE?redirectedFrom=fulltext accessed on 28.7.2022 at 8.45am.

rules and agreements.[26] This legal analysis is used in finding legal principles, rules and doctrines of law to address an existing problem of hydrocarbons straddling the maritime boundary of states.[27] The thesis utilises a combination of primary sources such as treaties, judicial decisions and state practice on transboundary hydrocarbon reservoirs. Through this approach, the study explains how judicial decisions and state practice have shaped the concept of cooperation in the joint management of shared resources.[28] Multilateral and bilateral agreements demonstrate the consent of parties to abide by the joint management mechanisms stipulated therein.[29] The methodology used in identifying state practice is based on proceedings of dispute settlements namely pleadings filed by states. Judgment, rulings, arbitration awards given by third-party dispute settlement bodies like the ICJ, ITLOS and arbitral tribunals form part of judicial decisions which interpret legal principles. Multilateral and bilateral delimitation treaties and agreements on shared hydrocarbon resources demonstrate accepted state practice. A qualitative research method explains available information on the historical development of cooperation in the exploitation of shared transboundary resources. Multilateral and bilateral treaties set forth cooperative management mechanisms of shared hydrocarbon resources. The existing legal systems will form the theoretical framework of this study.

State practice plays a crucial role in determining the legal regime applicable to straddling resources. Through State practice, evidence of customary law applicable in the context of shared resources, particularly hydrocarbons, is established. Cooperation between states on the exploitation of resources straddling the maritime boundary is a principle accepted in various legal

[26] Vienna Convention on the Law of Treaties, Vienna, 23 May 1969, EIF: 27 January 1980 governs the interpretation of treaties, an international instrument governing interpretation on treaties.

[27] Theresa A. C. Normative and empirical Research Methods: Their usefulness and Relevance in the Study of Law as an object (2016). Procedia-Social and Behavioral Science 219 (2016) 201-207.

[28] Aurlis A. Essays on the Doctrinal Study of Law; Springer available on https://books.google.nl/books?hl=en&lr=&id=QHXnqRKaHGkC&oi=fnd&pg=PR8&dq=essays+on+doctrinal+study+of+law&ots=vKw-YBGuq0&sig=josSV038Q7Ee3MF9FJPLwxsKegg&redir_esc=y#v=onepage&q=essays%20on%20doctrinal%20study%20of%20law&f=false accessed on 29.8.2022 and 10am.

[29] Ibid note 30, the VCLT notes the that free consent and good faith as the guiding principles of the law of treaties.

systems.[30] National law governs private contracts between states and contractors. State practice is based on the geographical region of the maritime space adjacent to several coastal states with opposite or adjacent maritime boundaries.

Legal sources relevant to shared hydrocarbon resources

While management of straddling fish stock has well-established multilateral treaties,[31] no established rules or customary laws govern straddling hydrocarbon resources. A multi-faced legal framework governs shared hydrocarbon resources. In the absence of well-established rules of customary law or a multilateral treaty setting forth the general obligation to cooperate with respect to transboundary hydrocarbon reservoirs. The legal basis for cooperation in transboundary hydrocarbons is drawn from secondary sources of international law.

The Vienna Convention on the Law of Treaties stipulates rules for interpretation of all treaties and agreements. Interpretation of provisions of UNCLOS with respect to joint management of transboundary hydrocarbon reservoirs are guided by the principles set out in VCLT.[32] Judicial decisions play an authoritative role in developing international law. Though the decisions are binding only on the parties of the case, international courts and tribunals have shaped the development of customary international law.[33] The principles of maritime boundary delimitation has developed through judicial decisions.[34] International courts and tribunals have identified a number of activities relating to the exploration of transboundary resources to be rules of customary law and binding to all states. The ICJ in *Hungary/Slovakia* clarified the obligation of states in environmental protection. It stated that it's the general obligation of States to ensure that activities

[30] ILC in it's report states that state practice can be transposed into international legal system if the practice is common in various legal systems, Report of the ILC A/77/10 Seventy-third session available on https://legal.un.org/docs/?path=../ilc/reports/2022/english/a_77_10_advance.pdf&lang=E accessed on 15.10.2022 at 11.00pm.

[31] Fish stock Agreement

[32] Vienna Convention on the Law of Treaties done at Vienna on 23 May 1969.

[33] Alex G. O. E., Tore H., Signe V.B. (2018) *Maritime Boundary Delimitation: Is it Consistent and Predictable? Cambridge University Press*

[34] Note 37

within their jurisdiction and control respect the environment of other States or areas beyond national control.[35] Further, judicial decisions have confirmed existing state practice as forming customary international law.

UNGA resolutions reflect the views of a state on a particular resolution and whether they are willing to be bound by the resolution.[36] Though not legally bounding, some resolutions made by states generate norms of customary international law.[37] The willingness of a state to conform to adopted resolutions depends on whether it votes for, against or abstains. Resolutions passed by an overwhelming majority of the member states may indicate the international community's willingness to be guided by the principles they embody, even if a state cannot be held to be legally bound by them. Resolutions on the cooperation of states in the exploitation of shared resources infer the willingness of states to manage shared straddling hydrocarbons jointly.

The ILC is a subsidiary organ of UNGA whose responsibility is progressive development and codification of International Law. ILC undertakes research in preparation of conventions on a subject that has not yet been regulated under international law, and there are no well-established state practices.[38] ILC submits a report to UNGA on the topic with recommendations to either take no action, adopt or take note of the report, recommend a draft to member states with a view of concluding a treaty or convention or convene a diplomatic meeting to conclude the treaty.[39]

Though UNCLOS recognizes joint development agreements as provisional arrangements, some scholars have suggested that JDAs are practical solutions to economic disputes arising from access

[35]Gabcíkovo-Nagymaros Project (Hungary/Slovakia) [1997] ICJ Rep 1, at paras 15-22, 37 ILM available on https://www.icj-cij.org/en/case/92 accessed on 10.8.2022 at 12.00pm, AloysiusP. L. (2007) Jurisdiction and Compliance in Recent Decisions of the International Court of Justice, European Journal of International Law, Vol. 18, Issue 5.

[36] Marko Divac Öberg, *The Legal Effects of Resolutions of the UN Security Council and General Assembly in the Jurisprudence of the ICJ* The European Journal of International Law Vol. 16 no.5 (2006)

[37] Gregory J. Kerwin, *Role of United Nations General Assembly Resolutions in Determining Principles of International Law in United States Courts*, The 1983 DUKE L.J. 876 (1983).

[38] Natalie N. E. (2019). The Law of Shared Hydrocarbon Resources and the Question of Shared State Responsibility for Environmental Harm Arising from Their Cooperative Management

[39] 1947 Statute of the International Law Commission Article 23.

to resources Several scholars have stipulate the need for joint development arrangements to include joint development agreements and unitisation agreements as practical means of accessing shared hydrocarbon resources. Ian Townsend classified Joint development to include arrangements for future settlement of maritime boundary, agreed on the maritime boundary and also shared resources.

Chapter Breakdown

This research is divided into two broad parts. Part I sets out the principles of maritime delimitation. Part II critically examines existing state practice on joint development of transboundary hydrocarbons and lessons for Kenya, Kenya and Somalia. Part I and II are further thematically divided into substantive chapters and Sections for further discussion.

Part I is divided into two chapters. Chapter 1 provides an analysis of maritime relations, with section 1 analysing the principles of maritime delimitation and section 2 maritime relations in the region. Chapter 2 analyses joint development arrangements, with section 1 addressing joint development arrangements. Section 2 analyses the legal framework for cooperation in transboundary hydrocarbons.

Part II is divided into two chapters. Chapter 3 analyses existing state practices on joint development arrangements on transboundary hydrocarbons. Section 1 of chapter 3 discusses existing practices on joint development arrangements and section 2 environmental, economic and technical aspects of transboundary hydrocarbons. Chapter 4 gives lessons that Kenya and Somalia should learn from existing state practices on joint management, exploration and exploitation of existing resources, with section 1 identifying the national legislative framework and section 2 coming up with recommendations.

PART ONE: JOINT DEVELOPMENT AND THE LEGAL REGIME GOVERNING TRANSBOUNDARY HYDROCARBON RESERVIORS

1. CHAPTER 1: MARITIME DELIMITATION AND RELATIONS

Delimitation of the maritime zones is vital for peaceful relations between neighbouring states. Maritime delimitation determines the limits of a state's maritime jurisdiction. Maritime limits determine modalities of cooperation between neighbouring coastal states. Different cooperation strategies and arrangements are used in overlapping maritime areas and already delimited maritime zones. In overlapping areas, cooperation acts as an interim measure to avoid conflict pending final delimitation. When a maritime boundary exists, cooperation focuses of solving technical and legal challenges arising from transboundary resources. This chapter outlines an overview of the maritime delimitation and regional maritime relations in the East Africa Region.

1.1. SECTION A: DELIMITATION OF THE CONTINENTAL SHELF AND THE EXCLUSIVE ECONOMIC ZONE

UNCLOS has motivated many states to delimit the territorial sea, exclusive economic zone and the continental shelf. Maritime delimitation is undertaken within the purview of UNCLOS. Upon delimitation, a single boundary line determines the limit of a state's jurisdiction over the territorial sea, EEZ and Continental shelf. Rights over minerals, hydrocarbons and living resources found in the Continental shelf are exclusive to a coastal state. Delimitation of the EEZ and Continental shelf enables states determine the limit of their exclusive right with respect to exploration and exploitation of resources of the continental shelf. The EEZ is vital in the development of hydrocarbon reservoirs as it is required for installations, platforms and safety zones. This section discusses delimitation of the continental shelf and EEZ.

1.1.1 The Continental Shelf and Exclusive Economic Zone

The Continental Shelf

Article 76 of UNCLOS gives the continental shelf a scientifically, legally and politically acceptable and workable definition. The continental shelf comprises the seabed and subsoil of the submarine areas that extend beyond a coastal state's territorial sea throughout the natural

prolongation of its land territory to the outer edge of the continental margin or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured or 350 nautical miles from the baselines or 100 nautical miles beyond the 2500 metre isobath.[40] The constraint lines stipulated in article 76(5) of UNCLOS are subject to the Continental margin established in article 76(4) of UNCLOS. Where the Continental margin extends beyond 200 nautical miles from the baselines, the foot of the continental slope determines the limit of the continental shelf.[41]

Natural prolongation of the land boundary stipulated in article 76 of UNCLOS affirms the customary international law set out in the *North Sea Continental Shelf Cases*.[42] The continental shelf is a long-standing international customary law entitlement bestowed on states according to their land territory.[43] The inherent right of a coastal state over the continental shelf is derived from its territorial jurisdiction.[44] The ICJ recognized the continental shelf concept under UNCLOS as part of international customary law. The Court held that the rights of the coastal state in respect of the Area of continental shelf that constitutes a natural prolongation of its land territory into and

[40] Article 76(5) of UNCLOS; also see *The North Sea Continental Shelf Cases (Federal Republic of Germany/Denmark; Federal Republic of Germany/Netherlands) (1969), ICJ Rep. 3 (85),* the ICJ held that each Party had an original right to those areas of the continental shelf which constituted the natural prolongation of its land territory under the sea. If defined the continental shelf to mean the seabed and subsoil, the natural prolongation of the land territory

[4141] Article 76(4) of UNCLOS.

[42] Ibid note 40.

[43] Convention on the Continental Shelf done at Geneva on 29th April 1958; see also In Alex G. Oude Elferink, *The Law of Maritime Boundary Delimitation: A case study of the Russian Federation, (1962)*, In the drafting of the Convention on the continental shelf, the ILC through the special Rapporteur Francois submitted to the ILC a report concluding that delimitation of the continental shelf was one of the regimes of the continental shelf that remained uncertain. The Rapporteur recommended that the median line or equidistance line be the general rule for delimitation. In UNCLOS I, article 6 of the convention on the continental shelf was retained as the substantiative delimitation provision.

[44] Ann L. Hollick, 'U.S. Oceans Policy: The Truman Proclamations' (1976) 17 Va J Int'l L 23, the concept of the continental shelf beyond the territorial sea commenced following the 1945 Truman proclamations. See also Kunz, J. (1956). Continental Shelf and International Law: Confusion and Abuse: *American Journal of International Law, 50(4) 828-853. doi:10.2307/;* Shigeru Oda, A Reconsideration of the Continental Shelf Doctrine, Tulane Law Review, Vol. 32 (1957), pp. 21-36

under the sea exist ipso facto and ab initio by its sovereignty over the land as an extension of it.[45] States draw the exclusive right over the continental shelf from their sovereignty over land territory.

States exercise jurisdiction over the outer limit of the continental shelf extending beyond 200 nautical miles based on the geographical formation of a state's coastline. The outer limit of the continental shelf is a scientific process undertaken by a coastal state. Coastal states must submit scientific and technical data to the CLCS to prove the proposed location of the outer limit of the continental shelf.[46] If data and materials submitted by a state confirm the establishment of the limits, CLCS will make recommendations to the state, which on that basis may establish final and binding outer limits.[47] Article 76(10) of UNCLOS provides that this is without prejudice to existing and prospective maritime boundaries between states with opposite or adjacent coasts. In the outer limit of the continental shelf, a state's sovereignty is limited to the exploration and exploitation of minerals. Limited application of the regime of the Area applies concerning payment of royalties ISA.[48]

Sovereign rights and jurisdiction over the continental shelf permit states to control hydrocarbons, minerals and living resources therein. UNCLOS recognizes a state's exclusive entitlement to living and non-living resources on the continental shelf.[49] The rights are exclusive because no other state can explore the continental shelf or its natural resources without the express consent of a coastal state.[50] The coastal state has the exclusive right to authorize and regulate drilling on the continental shelf. The rights do not depend on occupation or express proclamation.[51] The inherent rights to the continental shelf arise from the rights over the land territory.

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[45] Ibid note 40

[46] Supra

[47] Article 176(8) of UNLCOS

[48] Article 82 of UNCLOS

[49] Article 77(2) of UNCLOS

[50] Rothwell, Donald & Elferink, Alex & Scott, Karen & Stephens, Timothy. (2015). The Oxford Handbook of the Law of the Sea; See also Tanaka, Y. (2019). *The International Law of the Sea.* (3rd ed.). Cambridge: Cambridge University Press. Pp 236-278.

[51] René Jean Dupuy, Daniel Vignes A handbook on the new law of the sea. 1 (1991) Martinus Nijhoff Publishers. Pp 366-380,

In the exercise of the right to the continental shelf, a coastal state should pay due regard to the rights of other states. The right to the continental shelf does not extinguish the legal status of the superjacent waters. In exploring and exploiting hydrocarbons, a coastal state should not infringe or unjustifiably interfere with the rights of other states, especially navigation rights and freedoms. The requirement of due regard extends to the adjacent state if activities undertaken in a continental shelf of one state can cause pollution in the maritime zones of a neighbouring state. While exercising sovereign rights over the Continental shelf, coastal state must pay due regard to the EEZ of the neighbouring state especially when exploration activities are undertaken close to the maritime boundary.

Exclusive Economic Zone

The EEZ is an area beyond and adjacent to the territorial sea over which a coastal state can exercise its rights and jurisdiction subject to the rights and freedoms of other States.[52] Every coastal state has a right to extend EEZ beyond its territorial sea to the 200 nautical miles from the baselines.[53] Unlike the continental shelf which is an inherent right, sovereignty over the EEZ should be declared.[54] A state must expressly declare the existence of the EEZ to be entitled to exercise sovereign rights over the resources therein.

A coastal state has sovereign rights over the living and non-living resources of the EEZ. It can explore, exploit, manage and conserve natural resources of the superjacent waters to the seabed and subsoil. In addition, it has jurisdictional rights over the establishment and use of artificial islands, installations, marine scientific research and the protection and preservation of the marine environment[55] Oil and gas platforms, including safety zones, are constructed on the EEZ to undertake drilling. Concerning transboundary hydrocarbons, exploration and exploitation are environmentally risky activities. The national protection laws of each state regulate the protection

[52] Article 55 of the UNCLOS

[53] Article 57 of UNCLOS

[54] Alex Elferink, *Maritime Boundary Delimitation: The Case Law. Is it Consistent and Predictable?* Cambridge (2018), the EEZ and continental shelf have been described as functional regimes indicating the sovereign rights of a coastal states

[55] Article 56 of UNCLOS

of the marine environment. Nevertheless, where transboundary marine pollution is likely to occur, an obligation to cooperate through sharing information arises.

While exercising the sovereign rights over resources of the EEZ, a coastal state should pay due regard to the rights of other states. The rights of the continental shelf do not apply to the superjacent waters and do not affect the legal status of the EEZ. Except for the jurisdiction over submarine cables, the legal regime of the continental shelf and the EEZ apply to water columns in so far as they relate to installations and structures and safety zones around the artificial islands.[56] The doctrine of due regards grants a coastal state the right to authorize and regulate construction of artificial islands, installations and structures in its EEZ in addition to the freedom of navigation.

The legal regime of the continental shelf and EEZ play a vital role in facilitating the exploration and exploitation of hydrocarbons. The EEZ gives the coastal state jurisdiction over the seabed and superjacent waters up to 200 nautical miles. Within 200 nautical miles, a coastal state over the seabed and the subsoil is based on the EEZ regime and the continental shelf. The EEZ, described as a living regime, enables a state to explore and exploit hydrocarbons without legal challenges. The EEZ regime regulates the construction of platforms and installations to explore and exploit hydrocarbon resources from the continental shelf. Therefore, if exploration of the continental shelf by one state is likely to interfere with another state's jurisdiction over the EEZ, a coastal state must seek authorization to construct installations and structures before undertaking further developments. In addition, a coastal state has a duty to share information on activities of the continental shelf likely to cause environmental damage to the EEZ of the neighbouring state.

1.1.2. Delimitation of the Continental Shelf and the Exclusive Economic Zone

Maritime delimitation is the process of establishing lines separating the spatial ambit of the coastal state's jurisdiction over a maritime space where the legal title overlaps.[57] A single maritime

[56] Other states retain the freedom of overflight

[57] Yoshifumi Tanaka**,** *Predictability and Flexibility in the Law of Maritime Delimitation,* maritime delimitation effected where there is an overlap over legal title of a maritime space. Maritime delimitation creates maritime limits by which coastal states can delineate their maritime boundary and exercise territorial jurisdiction.

boundary line[58] separating coastal states establishes the maritime limit of the territorial sea, EEZ and continental shelf under which a state can exercise jurisdiction.[59] Maritime limits create certainty on a coastal state's limits in exercising its spatial jurisdiction. Certainties of jurisdiction over continental shelf enable states to undertake minerals and hydrocarbon exploration and exploitation activities. Delimitation and delineation of maritime areas grants states jurisdiction to enable them economically to benefit from marine resources therein.[60]

Under UNCLOS, adjacent or opposite coastal states can delimit their continental shelf by an agreement or compulsory dispute settlement procedures.[61] Delimitation by agreement enables states to reach an equitable solution in the overlapping claims over the continental shelf through cooperative arrangements like JDAs. Most states include JDAs or unitization clauses in maritime delimitation agreements.[62] Cooperation clauses in maritime delimitation agreements have enabled states to develop framework agreements for joint exploration and exploitation of straddling hydrocarbon reservoirs.[63] In delimitation by agreement, parties may choose the delimitation

[58] Ibid 37; ibid 71 para 42; see also Maritime boundary line separates two states. Courts and tribunals have used different terms when describing the line. *See Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America)* para. 190-194 the ICJ stated that In reality, a delimitation by a single line, such as that which has to be carried out in the present case, Le., a delimitation which has to apply at one and the same time to the continental shelf and to the superjacent water column can only be carried out by the application of a criterion, or combination of criteria, which does not give preferential treatment to one of these two objects to the detriment of the other, and at the same time is such as to be equally suitable to the division of either of them;

[59] Ibid 69

[60] Ibid 69

[61] Article 183 of UNCLOS states that the delimitation of the continental shelf between States with opposite or adjacent coasts shall be affected by agreement based on international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution; See Article 287 of UNCLOS stipulates compulsory dispute settlement procedures

[62] See the North See maritime delimitation agreements between the United Kingdom/Norway, The Kingdom of Netherlands/Denmark, Iceland/the United Kingdom. See also Nigeria/Sao-Tome and Principe, Australia/Timor-Leste, United Kingdom/Mexico.

[63] Agreement for Frigg field

method which will be binding on them.[64] Parties reach a compromise on the limit of their continental shelf and may explore possible cooperation strategies for joint development of the continental shelf.

Delimitation of the EEZ and continental shelf is based on the equidistance, proportionality and enclavement of the coastline.[65] Customary law and judicial decisions have confirmed the use of equidistance and equitable principles/relevant circumstances in the delimitation of the continental shelf.[66] In order to attain an equitable solution, judicial bodies have used the standard methodology of the three-stage approach to delimiting the continental shelf.[67] The first stage of maritime delimitation is identifying base points from which a provisional equidistance line is drawn. In *Bangladesh/Myanmar*, ITLOS observed that the geography of the parties' coastline is essential in determining the provisional baseline.[68]

The second stage of delimitation is adjusting the provisional equidistance line based on the relevant circumstances of the case to attain an equitable result. In *Guyana/Suriname*, the arbitral tribunal found no relevant circumstances of the case requiring adjustment to the provisional equidistant line.[69] Adjustment of the equidistance line is case-specific based on the geographical circumstances of the coastline. The disparity in the length of the coastline and the likelihood of a cut-off effect to the continental shelf are some of the geographical factors that can lead to an

[64] In the maritime delimitation between Kenya/Tanzania, Maritime delimitation between Tanzania/Mozambique, Maritime delimitation between Mozambique/South Africa, parallel delimitation line was used to delimit the EEZ and continental shelf diverting from the well-established equidistance line.

[65] Donat Pharand, Umberto Leanza*, Continental Shelf and the Exclusive Economic Zone delimitation and legal regime,* (1992) Martinus Nijhoff Publishers Vol. 19 pp. 81-94

[66] Stephen Fietta & Robin Cleverly, The practitioner's guide to Maritime Boundary Delimitation, (2017) Oxford University Press,

[67] Article 15 of UNCLOS; Supra, equidistant line consists of a series of straight lines, each controlled by one basepoint on either side. The line is defined by coordinates defining a series of points connected by straight or geodesic lines; See *Maritime Delimitation in the Black Sea (Romania/Ukraine);* See also Alex Elferink, *Maritime Boundary Delimitation: The Case Law. Is it Consistent and Predictable?* Cambridge (2018)

[68]*Dispute concerning delimitation of the maritime boundary between Bangladesh and Myanmar in the Bay of Bengal (Bangladesh/Myanmar)*

[69] Guyana v. Suriname arbitral award para. 342,

adjustment of the equidistance line.[70] The disproportionality check is applied as the final stage of delimitation to ascertain that the method applied is equitable. The disappropriation should be significant to render the equidistance principle inequitable.[71] The ICJ in *Black Sea* formulated the disproportionality to verify the equitableness of thee the equidistance line in the third stage of maritime delimitation.[72] Shifting the equidistance line to attain an equitable solution requires a balanced approach, avoiding that States that are in a similar situation are treated differently. Delimitation may result in both States not 'getting' a part of the area of overlapping entitlements.

The continental shelf contains enormous living and non-living resources like hydrocarbons and minerals. The economic wealth of these resources is insufficient to justify shifting the equidistance line. Jurisprudence from courts and tribunals has proved that international law accords

[70] In *Barbados/Trinidad and Tobago,* geographical considerations were used in delimiting the EEZ and continental shelf. The arbitral tribunal stated that; see also Barbados/Trinidad and Tobago, the arbitral tribunal described a two-step approach to delimitation as follows "*First, a provisional line of equidistance is posited as a hypothesis and a practical starting point. While a convenient starting point, equidistance alone will in many circumstances not ensure an equitable result in the light of the peculiarities of each specific case. The second step accordingly requires the examination of this provisional line in the light of relevant circumstances, which are case specific, to determine whether it is necessary to adjust the provisional equidistance line in order to achieve an equitable result. This approach is usually referred to as the "equidistance/relevant circumstances" principle*."; *Bay of Bengal case (Bangladesh/Myanmar),* ITLOS stated that when an equidistance line drawn between the two states produces a cut-off effect on the maritime entitlements of one of those states, as a result of the concavity of the coast, then an adjustment of that line may be necessary in order to reach an equitable result; In *Bay of Bengal Maritime Boundary Arbitration between Bangladesh and India (Bangladesh v. India); Somalia/Kenya,* the geographical consideration due to the concavity of the coastlines was the basis for adjusting the equidistance line.

[71] *Continental Shelf (Libyan Arab Jamahiriya/Malta), Territorial and Maritime Dispute (Nicaragua v. Colombia), Continental Shelf (Tunisia/Libyan Arab Jamahiriya)*

[72]Maritime Delimitation in the Black Sea (Romania v. Ukraine) Par. 122, the ICJ stated that *"at a third stage, the Court will verify that the line (a provisional equidistance line which may or may not have been adjusted by taking into account the relevant circumstances) does not, as it stands, lead to an inequitable result by reason of any marked disproportion between the ratio of the respective coastal lengths and the ratio between the relevant maritime area of each State by reference to the delimitation line"* see also Yoshifumi Tanaka, *The Disproportionality Test in the Law of Maritime Delimitation: In Maritime Boundary Delimitation: The Case Law. Is it Consistent and Predictable?* by Alex Elferink, Tore Henriksen and Signe Busch Cambridge (2018)

geographical circumstances primary importance for shifting the equidistance line.[73] The presence of existing natural resources (hydrocarbons, minerals and fisheries) cannot justify shifting the equidistance line except in exceptional circumstances.[74] Existing hydrocarbon resources and oil and gas concessions cannot be considered exceptions to the equidistance rule save for exceptional circumstances like historic oil and gas practices between the states.[75] Oil concessions and oil wells are irrelevant for shifting the equidistance line. The courts have been reluctant to shift the equidistance line due to oil concessions and oil wells proofing that hydrocarbon does not justify shifting the equidistance line.[76] Also, fisheries are not a compelling justification for shifting the equidistance line. Unlike exceptional cases like the *Jan Mayen Case*, where fisheries were the main known economic resource for the local communities, the equidistance line cannot be altered.[77]

Delimitation determines the limit of sovereign rights over resources of the continental shelf. When the maritime boundary is clear, legal and practical challenges arise when transboundary hydrocarbon resources straddle the maritime boundary. Each state has legal ownership of the transboundary hydrocarbon reservoirs that go beyond the boundary line. Any of the coastal states can exploit it from its maritime area. Ideally, in such a scenario, cooperation is encouraged.

[73] Ibid 80 pg. 83-93.

[74] Lando, M. (2019). *Maritime Delimitation as a judicial process (*Cambridge Studies in International and Comparative Law). Cambridge: Cambridge University Press.

[75] In the *Application for Revision and Interpretation of the Judgment of 24 February 1982 in the Case concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya) (Tunisia v. Libyan Arab Jamahiriya),* the court considered historic hydrocarbon practice retaliated to seismic activity in the maritime area to shift the equidistance line. In *Newfound-Labrador/Nova Scotia,* the tribunal rejected the hydrocarbon argument due to absence of unequivocal pattern of conduct in the area.

[76] Ibid 64; see also *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v. Nigeria: Equatorial Guinea intervening).*

[77] *Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v. Norway) par. 79.*

1.2. SECTION B: REGIONAL MARITIME RELATIONS

Kenya and Somalia are members of the WIOMA, an association under the Nairobi Convention to protect and conserve the coastal and marine environment of the WIO. Figure 2 below indicates members of the WIO. Member states of WIO share undertake collaborative research and share data on all activities undertaken in the region. Member states are further guided by the principles of the African Union. An overview of maritime delimitation in the African Region explains the dire need to fast-track maritime delimitation and maritime regional cooperation.

Maritime delimitation in the region is relevant in determining the maritime limits of the regional states, identifying resources located in the maritime region and resources with the potential of being shared. This section will discuss the maritime regional maritime relations and set the ground for collaboration in the development of transboundary reservoirs.

1.2.1. Maritime Delimitation in the Region

Africa's maritime boundaries encompass internal waters, territorial sea, EEZ and the continental shelf. Delimitation of boundaries in the African region remains one of the complex areas of international law of the sera due to political, national, economic, regional and security reasons. Most maritime boundaries in Africa have not been delimited, influencing tension between states who seek to control natural resources found in overlapping maritime areas.[78] The quest to fix maritime boundaries has strained good relationships between neighbouring states, which are paramount for maritime security. Suspected mineral and hydrocarbon resources have frustrated the delimitation of maritime boundaries in the region, leading to conflicts.[79]

Undelimitated maritime boundaries jeopardise 2050 Africa's Integrated Maritime Strategy (AIMS). The poor response to maritime delimitation has been attributed to the absence of natural resources hence proving that resources justify delimitation of the maritime boundaries.[80] States have been reluctant to delimit their maritime

[78] According to the Ocean Data and Information Network for Africa (ODINAFRICA) Status Report on African Maritime Border Disputes (ODINAFRICA, 2014), about 30 percent of Africa's borders had been demarcated.

[79] The presence of oil and gas reserves frequently represents the commercial spur to States in getting on with boundary delimitation, particularly in offshore maritime areas.

[80] Sousa, I. (2014). Maritime Territorial Delimitation and Maritime Security in the Atlantic (pp. 10-11). Future Scientific Paper, European Union 7th Framework Programme, European commission Project Number 320091, pp. 10-11.

boundaries when no proven mineral and hydrocarbon resources exist. Several attempts have been made to fast-track delimitation of the maritime boundary within the region.[81] In addition to several attempts made to delimit maritime boundaries within the region, the African Union (AU) recommended its members expedite the delimitation of maritime boundaries through peaceful means and come up with collaborative mechanisms of managing natural resources per UNCLOS.[82]

The enormous resources have influenced the delimitation of maritime boundaries in the region. The economic benefits derived from marine natural resources, particularly hydrocarbons, play a significant role in maritime delimitation claims in the region.[83] The regional maritime zones have significant offshore oil and gas, which is a critical component and of interest to many states in the region. The growing interest in exploring and exploiting natural resources has necessitated interest in maritime delimitation.[84] Hydrocarbon potential in the

[81] The first attempt to Fasttrack delimitation of maritime boundary within the region was recorded in 1964 when the principle of respect of existing boundaries in Africa on the attainment of independence was adopted in the first ordinary meeting of Heads of states of the Organisation of Africa Unity in Cairo in 1964. In 1986, in the 44th Ordinary council of Ministers held in Addis Ababa Ethiopia, the Peace and Security Council of the African Union adopted principles of negotiated settlement of boarder disputes. The Assembly of Heads of State and Government, held in Durban, South Africa in 2002, provides for the delimitation and demarcation of African boundaries in order to accelerate and deepen the political and socio-economic integration of the continent and to provide it with a popular base. The 8th Ordinary Session of the Assembly of Heads of State and Government of the African Union, held in Addis Ababa 2007 adopted the declaration on encouraging the Commission to pursue its efforts of structural prevention of conflicts, especially through the implementation of the African Union Border Programme (AUBP) that is concerned with the establishment of its maritime boundaries, including the outer limits of the extended Continental Shelf (CS) of its Member States.

[82] Accra, Ghana, 9-10 November 2009. The Conference was attended by AU Member States and some Regional Economic Communities (RECs) together with major maritime institutions around
the world

[83] *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v. Nigeria: Equatorial Guinea intervening), Maritime Delimitation between Guinea-Bissau and Senegal (Guinea-Bissau v. Senegal), Dispute concerning delimitation of the maritime boundary between Ghana and Côte d'Ivoire in the Atlantic Ocean (Ghana/Côte d'Ivoire), Provisional Measures, Delimitation of maritime boundary in the Indian Ocean (Kenya/Somalia).*

[84] Theodore Okonkwo, *Maritime Boundaries Delimitation and Dispute Resolution in Africa*, Beijing Law Review, Vol.8 No.1, 2017

region has led to maritime disputes over hydrocarbons in overlapping maritime areas increasing the desire to delimit maritime boundaries.

The increasing economic and political interdependence among African states attracted the desire to establish the outer limits of the continental shelf beyond 200 nautical miles. Generally, the African continent is characterised by many maritime disputes due to undelimitated maritime boundaries. Conflicts over overlapping maritime areas, more particularly the continental shelf, intensified when some states attempted to unilaterally delineate the overlapping maritime claims when making submissions to the CLCS.[85] In all maritime delimitation claims, failure to delimit the maritime boundaries by agreement was caused by proven hydrocarbon resources existing in the overlapping maritime area. The presence of foreign oil and gas companies and political interference complicates the resolution of maritime delimitation claims within the region.[86] Only 30 out of 90 potential maritime boundaries have been established in the African region, with Somalia/Kenya being the most recently established maritime boundary. The Mauritius/Maldives maritime boundary dispute is currently at the ITLOS.[87] The maritime boundaries have been delimited by agreement and judicial delimitation procedures.

In the West Indian Ocean (WIO), most maritime boundaries have been delimited except Madagascar, which is surrounded by more than one undelimited boundary.[88] Maritime boundary agreements in the WIO have a form of joint development arrangement.[89] The Kenya/Tanzania maritime delimitation agreement establishes a joint fisheries zone between the two states where licences issued by either state are recognized. Kenya and

[85] Ibid 96

[86] Ibid 85

[87]Dispute concerning delimitation of the maritime boundary between Mauritius and Maldives in the Indian Ocean (Mauritius/Maldives)

[88] Madagascar is bordered by other Indian Ocean insular States including Comoros, the French island of Réunion, and Seychelles. Potential maritime disputes over the following boundaries may arise: - disputed territories of Glorioso Islands (claimed by France and Madagascar), Mayotte (Comoros and France), Juan de Nova Island (France and Madagascar), Bassas da India (France and Madagascar), Europa Island (France and Madagascar), and Tromelin Island (France and Mauritius)

[89] Joint fisheries zone along Kenya/Tanzania boundary, Joint development arrangement for the EEZ and continental shelf along Mauritius/Seychelles maritime boundary.

Somalia delimited their maritime boundary through judicial means[90] and agreements.[91] The joint development zones in the Gulf of Guinea relate to joint exploration and exploitation of mineral resources, particularly hydrocarbons.

Natural resources, especially hydrocarbon resources, have complicated the WIO's maritime delimitation process. There have been calls for reforms in managing maritime boundaries, especially transboundary resources, through joint management arrangements. The collaborative process through government institutions is encouraged in managing maritime boundaries. Through this, resources, especially transboundary resources like hydrocarbons, can be jointly managed, strengthening cooperation, peace and security in the regional maritime waters.

1.2.2. Marine Resources in the Region

The WIO has an abundance of living and potential non-living resources within the transboundary area. In the entire Indian Ocean region, Australia and India have been leading in offshore hydrocarbon exploration. The interest in offshore hydrocarbon exploration in East Africa and the West Indian Ocean has many investors re-evaluating opportunities in the region. The deep-water basin surrounding Kenya, Tanzania, Madagascar, Mozambique, Seychelles and South Africa, as well as those surrounding Comoros, have been discovered to have sedimentary basins rich in hydrocarbons. Studies have revealed substantial discoveries of hydrocarbons in the WIO basins.[92]

Recent primary offshore oil and gas have been discovered in Tanzania and Mozambique. Mozambique recently discovered substantial amounts of offshore oil and gas in its maritime zone and has commenced production.[93] The discovery of high volumes of gas in the Mozambique basin off the coast of Mozambique catalysed exploration in the Lamu and Somali basins and the entire

[90] Ibid 78.

[91] Nigeria/Sao-Tome and Principe

[92] Ibid 49

[93] Luciana Palmeira, *The Brazillian Regulatory Systems for Unitisation and offshore Decommissioning- An analysis of the Transnational Legal Order* Paul Warthong (2016)

sub-region.[94] Following massive gas discoveries in Mozambique, Kenya, Tanzania and other neighbouring states regenerated the search for offshore oil and gas potential.[95] Somalia has recently begun exploring its potential offshore petroleum exploration and exploitation after its suspension in 1991.[96] Tanzania has made an offshore gas discovery in its maritime waters.[97] In Kenya, hydrocarbon explorations have been ongoing with mixed discoveries of oil and gas shows. Offshore hydrocarbon exploration in Kenya has been ongoing since the 1970s.[98] There is no known hydrocarbon potential in Madagascar's maritime zones. Somalia is in the process of undertaking deep-water hydrocarbons after signing a PSA in 2022. The discoveries offshore in the Mozambique Channel have fuelled interests in Comoros, Mauritius, and Seychelles. Seismic studies have shown oil potential in the Lamu-Juba basin. [99] The baseline for the maritime boundary between Kenya and Somalia lies in the Lamu-juba basin.[100]

[94] Vasco Becker-Weinberg, *Joint Development of Hydrocarbon Deposits in the Law of the Sea,* Springer-Verlag Berlin Heidelberg (2014).

[95] Ibid; see also According to Kenya National Oil Corporation, oil and gas exploration in the Lamu basin begun in 1954 where 10 wells were drilled. Despite oil stains and gas shows, the wells were never completed to production stage. In the 1980s, two of the three wells drilled showed oil stains. In date, two of the four more wells drilled after 2007 have oil stains and gas shows available on https://nationaloil.co.ke/upstream/ accessed on 2.9.2022 at 19.10

[96] According of Somali Petroleum Authority, exploration in Somalia began onshore in the 1950s with the drilling of several onshore wells, but no notable economic discoveries. Tragically, the collapse of the Government in 1991 ushered in a long period of political instability, where Somalia remained inaccessible to exploration companies for 25 years.

[97] Available on https://www.pura.go.tz/documents/gas-discoveries

[98] Kenya National Oil Corporation available on https://nationaloil.co.ke/upstream/ accessed on 2.9.2022 at 19.10

[99] L. M. Davidson*, T. J. Arthur, G. F. Smith & S. Tubb, *Geology and hydrocarbon potential of offshore SE*, Petroleum Geoscience, Vol. 24 | 2018 | pp. 247–257 (2017), the data acquired from the survey covered the deep-water area from close to the disputed border with Kenya to a point some 1200 km to the NE where major transform lineaments intersect the Somalia coast. The outboard limit of the survey was set at a water depth of c. 3300 m; Somalia Hannah Kearns, Douglas Paton, Neil Hodgson, Karyna Rodriguez, Roxana Stanca, Abdulkadir Abiikar Hussein *Offshore Somalia: Defining crustal type and its implications for prospectively,* (2015) available on

[100] Data from L-13, an onshore well at the coastal land boundary showed indicated presence of gas. https://nationaloil.co.ke/wells-drilled/

The geological processes of the maritime boundary between Kenya and Somalia comprise several sedimentary basins off the coast of East Africa. The deep-water basins of the western Indian Ocean (WIO) include Madagascar,[101] Mascarene basin,[102] Mozambique basin[103] and Somali basins (5100 m, between Somalia and Seychelles). The Mozambique basin extends through Tanzania to Kenya's deep waters joining the Somali basin. The Lamu basin extends seaward off Kenya's mainland and joins the Somali basin towards the 200 nm limit. The Somali Basin unites the southern coast with Kenya's Coast in a single continuous feature, more than 2000 km in length. Due to the depth, more expensive deep-water drilling equipment is needed. Unlike onshore and shallow water drilling, deep-water drilling is capital-intensive and requires large investors. Local investors in most countries in the WIO are unable to meet the exploration costs and associated risks. Therefore, exploration is carried out by large independent companies that are already significant players in the petroleum industry. Due to the nature of deep-water drilling, investors may be unwilling to undertake competitive drilling on a transboundary reservoir due to the likelihood of wastage on the part of the investors.

In addition, maritime security is paramount in offshore oil and gas exploration and exploitation. Due to the significant investment involved, misunderstandings from competitive drilling may lead to terrorist attacks and robberies targeting oil and gas platforms and installations. Regarding maritime security, WIO states collaborate in ensuring maritime safety in the region. In 2009, piracy off the coast of Somalia accounted for

[101] Viviane Menezes, Heather Furey, Amy Bower, Matthew Mazloff, *Deep Madagascar Basin (DMB) Experiment: A Quest to Find the Abyssal Water Pathways in the Southwest Indian Ocean* located 5500 m, southeast of Madagascar available on https://www2.whoi.edu/site/bower-lab/deep-madagascar-basin-experiment/

[102] Edwin Alfonso Sosa, *Tide-Generated Internal Solitary Waves generated on a large sill of the Mascarene Plateau excite Coastal Seiches in Agalega and Rodrigues Islands*, (2017) 4900 m, west of the Mascarene Plateau, a submarine plateau in the Indian Ocean on the North of Madagascar extending at approximately 2000km from Seychelles to the Reunion available on https://www.researchgate.net/publication/312652070_Tide-Generated_Internal_Solitary_Waves_generated_on_a_large_sill_of_the_Mascarene_Plateau_excite_Coastal_Seiches_in_Agalega_and_Rodrigues_Islands/figures?lo=1

[103] Jennifer Klimke, Dieter Franke, Estevão Stefane Mahanjan, and German Leitchenkov,*Tie points for Gondwana reconstructions from a structural interpretation of the Mozambique Basin, East Africa and the Riiser-Larsen Sea, Antarctica*, Solid Earth, (2018) extents 5000 m, south of the Mozambique channel available on https://www.researchgate.net/publication/322507389_Tie_points_for_Gondwana_reconstructions_from_a_structural_interpretation_of_the_Mozambique_Basin_East_Africa_and_the_Riiser-Larsen_Sea_Antarctica/figures?lo=1

54% of the worldwide piracy attacks[104] Regional and global collaboration was undertaken to combat piracy. Regional states established measures to combat piracy off the coast of Somalia. Collaboration among the Contact Group on Piracy off the Coast of Somalia (CGPCS) has facilitated a reduction in piracy attacks.[105] Regional states adopted elaborative measures[106] to combat onshore and offshore piracy attacks. CGPCS shares Piracy-related information transmitted to members. Regional Maritime Rescue Coordination Centre (RMRCC), Maritime Rescue Coordination Centre (MRCC) and Regional Maritime Information Sharing Centre (ReMISC) play a key role in coordinating maritime security in the WIO.[107] Among other states, Kenya prosecutes piracy-related offenses and other crimes at sea.[108] Through collaboration, Kenya and Mauritius have facilitated the post-sentence repatriation of convicted Somali pirates to Somalia.[109] The collaboration between the two states is paramount in preventing the resurgence of piracy and terrorism against oil and gas installations [110] With the increase in exploration activities, collaboration is needed to prevent piracy and

[104] According to the International Maritime Bureau Piracy Reporting Centre (IMB PRC), a total of 217 of the total 406 piracy attacks in the year 2009 took place off the coast of Somalia accessed on

[105]United Nations Security Council Resolution 1851 of 16th December 2008 created the CGPCS. The CGPCS is a voluntary ad hoc international forum bringing together states, organisations and industry groups interested in combating piracy and armed robbery off the coast of Somalia. It was created on January 14, 2009 to coordinate political, military, industry, and non-governmental efforts to bring an end to piracy off the coast of Somalia available on http://unscr.com/en/resolutions/1851 accessed on 2.9.2022 at 9.30pm.

[106] Djibouti Code of Conduct

[107] Regional Maritime Rescue Coordination Centre (RMRCC) in Mombasa, Kenya, Maritime Rescue Coordination Centre (MRCC) in Dar es Salaam, United Republic of Tanzania and the Regional Maritime Information Sharing Centre (ReMISC) in Sana'a, Yemen sharing have played a key role in countering piracy available on https://www.imo.org/en/OurWork/Security/Pages/Content-and-Evolution-of-the-Djibouti-Code-of-Conduct.aspx accessed on 1.9.2022 at 9.00

[108] Paul Musili Wambua, *The jurisdictional challenges to the prosecution of piracy cases in Kenya: mixed fortunes for a perfect model in the global war against piracy* WMU J Marit Affairs (2012)

[109] UNSC Resolution S/2016/843 acknowledged UNODC Global Maritime Crime Programme for it's continued facilitation of repatriation and transfer of Somalis convicted or acquitted of acts of piracy from regional prosecution states to Somalia.

[110] According to International Maritime Bureau (IMB), there has been no successful hijacking or robbery incidences of the coast of Somalia.

terrorist attacks on offshore oil and gas installations. With these collaborative measures, piracy cases off the coast of Somalia have significantly reduced.

In addition to hydrocarbons, the marine environment of the WIO has a variety of marine living resources and is a rich fishing ground for indigenous artisanal and commercial fishermen. The region is a fishing ground for indigenous coastal communities.[111] The WIO region is a rich belt where tuna straddles the maritime boundary.[112] The Southwest Indian Ocean Fisheries Commission has implemented several collaborative mechanisms to conserve fisheries and curb IUU fishing. Though IUU fishing is rampant, some states like Somalia have pledged to undertake enforcement procedures against illegal fishing.[113] The rich fisheries resources have been a source of conflict between some states. Common fisheries zones established along maritime boundaries promote collaboration and prevent future conflict over the fishing ground.

The WIO consists of rich marine biodiversity supporting the coastal communities directly and indirectly. The interest in hydrocarbon resources under the seabed is exhibiting pressure on the coastal ecosystem especially seismic studies undertaken in MPAs. In the absence of collaboration, oil and gas activities undertaken in a state's maritime zone can negatively impact the MPAs of a neighbouring state. The WIO encourages the creation of TBMPA to protect fragile marine ecosystems from hydrocarbon exploration risks.[114] The Transboundary Marine Protected Areas (TBMPA) in the region have facilitated the protection of the marine environment and fostered regional cooperation. Due to the strengthened regional cooperation, WIO states are willing to compromise and agree on the formula for managing transboundary oil and gas reservoirs. In addition, protecting the fragile marine ecosystem in the WIO needs collaboration.

[111] In 1991, Somalia accepted joint ventures trawlers to legally operate in its territorial sea and EEZ. This attracted fishing trawlers from all over the world. Distant water fleets from all overtook advantage and operated in Somalia's EEZ without authorization.

[112] West Indian accounts for 25% of the world's tuna caught

[113] Kenya Somalia

[114] WIO Marine Protected Area Outlook 2021 report available on https://www.wiomsa.org/wp-content/uploads/2021/07/WIOMPAO.pdf accessed on 22.12.2022 at 2.19pm.

Map of the WIO region (Source: Bhoyroo, 2018[115])

Conclusion

Delimitation of the EEZ and the Continental shelf is crucial in determining a state's maritime jurisdiction. Properly defined maritime zones can foster good regional relationships as neighbouring states can identify hydrocarbon reservoirs. Clear identifiable transboundary reservoirs can foster collaboration. Regional states can identify other straddling natural resources that may cause conflict and frustrate collaboration in hydrocarbons. Therefore, maritime boundary delimitation is significant in the joint development of transboundary hydrocarbons.

[115] Sushma Mattan-Moorgawa, Hutheifa raad Ali, Ocean Acidification (Oa) White Paper Draft Ocean Acidification Paper For Western Indian Ocean Region, 2018 available on https://www.researchgate.net/publication/328031187_OCEAN_ACIDIFICATION_OA_WHITE_PAPER_DRAFT_OCEAN_ACIDIFICATION_PAPER_FOR_WESTERN_INDIAN_OCEAN_REGION accessed on 1.12.2022 at 1pm.

2. CHAPTER 2: OBLIGATION TO COOPERATE IN THE MANAGEMENT OF TRANSBOUNDARY HYDROCARBONS UNDER INTERNATIONAL LAW

Maritime delimitation creates certainty of sovereign entitlement to resources of the continental shelf. Uncertainty arises if hydrocarbon resource reservoirs are discovered to be transboundary. Legal and political issues influence the development of transboundary hydrocarbon reservoirs. Separate legal instruments inform of joint development agreements to regulate the exploitation of shared deposits. Because the deposit can be exploited by any one of the states, practical challenges arise as the exploitation can lead to wastage. To avoid wastage, stakeholders and operators in the petroleum industry can collaborate to find a solution. This chapter explores how states can cooperate in managing transboundary hydrocarbon reservoirs.

2.1.SECTION A: DUTY TO COOPERATE COOPERATION IN TRANSBOUNDARY HYDROCARBON RESERVOIRS

The nature of hydrocarbon resources makes them migrate through the rocks across the maritime boundary of two states, creating legal challenges in developing the shared hydrocarbon reservoirs. Practical and legal difficulties arising from development of shared hydrocarbon reservoirs are challenging to international law practitioners particularly when states are unwilling to cooperate. In such a scenario, duty to cooperate, the shift in whether there is a duty to cooperate in the exploiting shared hydrocarbon reservoirs. Further, absence of an express prohibition of competitive drilling under international law leaves the option of cooperation to the respective coastal states. This section discusses the duty to cooperate and whether competitive drilling is acceptable under international law.

2.2.1. Nature of Transboundary Hydrocarbons

Hydrocarbon deposits comprise a concentration of organic sediments composed of hydrogen and carbon atoms found in basins trapped in pore spaces of rocks in the subsoil that may be liquid, gas or solid.[116] When a source rock where petroleum is trapped is drilled, the pressure is released, forcing the rock content onto the surface. Based on the drilling mechanism, drilling operations

[116] Ibid 49

diminish subterraneous pressure inside the rock deposit, altering the underground characteristics.[117] Due to these characteristics, extracting the petroleum from one location impacts the conditions of the entire reservoir.

Offshore hydrocarbons are non-living natural resources in the seabed and subsoil that can be accessed through the territorial sea, archipelagic waters and EEZ. Due to application of different principles in delimitation, one reservoir can be shared between two states making it possible to be exploited from either side of the maritime boundary. Such transboundary reservoirs pause legal and technical challenges. The concept of transboundary hydrocarbon reservoirs was first addressed by the ICJ in the *North Sea Continental Shelf Cases.* The Court articulates the difficulty that emerges in overlapping zones especially when transboundary hydrocarbon resources are located on both sides of the line diving the continental shelf of two states.[118] The difficulty of such a transboundary reservoir is that it can be exploited from either side which may result to detrimental or inefficient exploitation by both states from either side of the maritime line. Due to the nature of a transboundary reservoir, if the first state removes a proportion located on its continental shelf, other states may be unable to harvest the oil and gas the same reservoir. [119]

Alberto defines a transboundary resource to mean natural resources located within an area divided by a land territory or maritime boundary separating two sovereign states' or a state and extraterritorial maritime zone namely seabed and International Seabed Area. This definition

[117] Luciana Palmeira, *The Brazillian Regulatory Systems for Unitisation and offshore Decommissioning- An analysis of the Transnational Legal Order* Paul Warthong (2016), see also Vasco Becker-Weinberg, *Joint Development of Hydrocarbon Deposits in the Law of the Sea,* Springer-Verlag Berlin Heidelberg (2014). In some incidences, operators must introduce additional pressure by reinjection of additional gas into the drilled rock deposit to recover the remaining oil content. The mobility of petroleum through geological layers of the subsoil caused by the release of pressure allows them to move within the permeable source rock, making it challenging to undertake simultaneous drilling operations. The existence of two or more points for the release of pressure may hinder the chances of any of the operators recovering a significant part of the petroleum trapped in the rocks.

[118] Ibid 40 para. 98-100

[119] Lagoni, R. (1979). Oil and Gas Deposits across National Frontiers. *American Journal of International Law, 73*(2), 215-243. doi:10.2307/2201608.

includes hydrocarbons straddling the maritime boundary of two states and those straddling the national jurisdiction of a coastal state and the area stipulated in article 142 of UNCLOS.[120]

The deposit should cross the continental shelf of a state onto the continental shelf of neighbouring state making both state exercise sovereign rights of the oil and gas.[121] The physical, chemical and geological conditions oil and gas should cross the boundaries set on the surface by moving in the rocks, with the result that the field can be developed on either side of the border. The oil and gas in a transboundary deposit should be capable of travelling through the rocks and being developed from either side of the maritime boundary. The geographical characterises is that it is found in the continental shelf of two or more states and can be developed by two or more states. Whether gaseous or liquid, the exploitation of the resources in the straddling deposit should invariably impact the rights of both states.[122] Development of a transboundary hydrocarbon reservoir is governed by is the legal systems of two states.

Due to the different legal systems applicable, states can issue licences to different operators to explore and develop transboundary deposits leading to possible competitive drilling which is detrimental to operators. When competing drilling is in progress, one operator's production is put back into the ground to provide another operator's production with the pressure required to drive the latter's oil to the surface without sharing some benefits.[123] Due to the financial implication, operators cannot accept reintroducing their production back into the well without sharing proceeds.

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[120] Alberto Szekely, 'The International Law of Submarine Transboundary Hydrocarbon Resources: Legal Limits to Behavior and Experiences for the Gulf of Mexico', 26 Nat. Resources J. 733 (1986) https://digitalrepository.unm.edu/nrj/vol26/iss4/8 accessed 17 July 2022

[121] Nigel Bankes, Maria Madalena das Neves. 2020. The United Nations Convention on the Law of the Sea and the Arctic Ocean. The Palgrave Handbook of Arctic Policy and Politics, pages 375-391. See also A. Cherepovitsyn , A. Moe and N. Smirnova, 'Development of Transboundary Hydrocarbon Fields: Legal and Economic Aspects' (Indian Journal of Science and Technology, Vol 9(46), 2016 https://sciresol.s3.us-east-2.amazonaws.com/IJST/Articles/2016/Issue-46/Article63.pdf accessed 24 October 2022

[122] LEFEBER, R., Law, A. & U. of A., 2015. International Law and the Use of Maritime Hydrocarbon Resources, IFRI: Institut Français des Relations Internationales, see also

[123] Ibid 55 page 5-22; Frank Jahn, Mark Cook, Mark Graham *Hydrocarbon Exploration and Production,* Amsterdam, 2nd Edition, Elsevier, (2008)

Further, the rush of as much oil as possible between the operators can lead to uncontrolled drilling and waste of hydrocarbon resources.[124] Allowing competitive drilling of a transboundary reservoir amounts to acceptance of the rule of capture by international law.[125]

Due to absence of a multilateral convention to govern transboundary reservoirs, states adopted the use of Joint development agreements and unitisation agreements as legal solutions to the technical challenge. JDAs and UAs are collaboration mechanisms between states sharing transboundary reservoirs. Two or more states cooperate to explore and exploit hydrocarbon resources that straddle the maritime boundary.[126] The requirement to cooperate in exploitation of transboundary hydrocarbons is voluntary. This makes it difficult for states that have strained diplomatic relationships to collaborate hence increasing the risk of competitive drilling.

2.2.1. Whether there is a duty to Cooperate in the Management of Transboundary Reservoirs under International Law

Before analysing whether states have aa duty to cooperate in transboundary hydrocarbons, the is a need to analyse competitive drilling, which stems from the rule of capture. Cooperation in

[124] Michael A. Arthur, David R. Cole, *Unconventional Hydrocarbon Resources: Prospects and Problems* Geoscience world Vol. 10. No. 4, Elements (2014) 10 (4): 257–264; see also David Edward Pierce *Coordinated Reservoir Development-An Alternative To The Rule Of Capture For The Ownership And Development Of Oil And Gas* Journal of Energy and Policy Law, Vol. 4, No. 2 of 1983, available on *https://heinonline.org/HOL/Contents?handle=hein.journals/lrel4&id=1&size=2&index=&collection=journals* see also Bruce M. Kramer and Owen L. Anderson, ''The rule of capture-an oil and gas perspective'', in: Environmental Law (2005), p. 949, describes the principle of the rule of capture as a legal principle according to which the owner of a certain tract of land had the right to make his the game or animals ferae naturae that came through or could be found in his respective property, as part of his right of property to the land

[125] Page 35, rule of capture

[126] Vasco Becker-Weinberg, *The internationalization of marine natural resources in UNCLOS in: Recent Developments in the Law of the Sea*, edited by Rainer Lagoni, Peter Ehlers and Marian Paschke (LIT Verlag: Berlin, Munster, Vienna, Zurich, London, 2010), pp. 9–54 describes joint development as a cooperative effort for the internationalization of marine natural resources between two or more States for the exploration and exploitation of offshore hydrocarbon deposits that straddle a boundary line or that are found in maritime areas of overlapping claims.

transboundary hydrocarbons stems from the common phenomena of competitive drilling.[127] Unlike overlapping maritime areas, a reservoir straddling the maritime boundary means that it is shared by two states hence can be exploited from either side by both states. Generally, international law does not permit competitive drilling on one reservoir. Though there is no express prohibition, State practice from maritime delimitation agreements indicates the willingness of states to cooperate in transboundary hydrocarbon resources.

2.2.1.1.Rule of Capture

The rule of capture is defined as the right to drill for and produce oil and gas from a particular tract of land even though doing so would drain the hydrocarbon concerned from beneath the land of another party.[128] Earlier practice on onshore hydrocarbon, permitted a landowner to drill and exploit oil and gas reservoir including those straddling into a neighbour's land. The legitimate practice was referred to as the rule of capture. The rule of capture was a recognised legal principle in the national law of the United States of America. Under this principle, if the owner of a land drilled an oil and gas deposit extending onto the neighbour's land, compensation could not be claimed by the neighbour for the oil and gas that migrated to their land. Operators rushed to explore as many resources as possible without due regard to the rights of the neighbouring landowner.[129] The rush to explore as many resources as possible led to an increase in unregulated and unrestricted drilling.

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[127] Ian Townsend-Gault, Zones of Cooperation in the Oceans – Legal Rationales and Imperatives in Maritime Border Diplomacy by Myron H. Nordquist, John Norton Moore, John Norton Moore, and Judy Ellis, Brill (2016), In the18th century, unsustainable competitive drilling in the United States of America encouraged operators to cooperate in treating s field as a single reservoir

[128] Muskat, Morris. 1949. *Physical Principles of Oil Production*. New York: McGraw-Hill Book Co. NaftEMA. 2016. "Iraq Capture Four Iranian Oil Fields in Majnoon.

[129] The text of the Fourteenth Amendment to the Constitution of the United States of America states that "*All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or*

The increase in unregulated and unrestricted drilling led to a production crisis.[130] The regular unregulated drilling of oil and gas wells necessitated implementation of conservation measures.[131] The growing pleas for conservation facilitated adoption of unitization of deposits between different operators.[132] Unitization established contractual obligations between operators, leading to optimum oil and gas exploitation. Eventually, the rule of capture was outlawed. Consequently, other countries followed the USA by passing legislation that envisaged unitization of hydrocarbon deposits as a means of preventing competitive drilling.[133] Due to the contractual obligation established in the national legislation or concession agreements between states and operators, it was difficult to apply the prohibition of the rule of capture on transboundary hydrocarbon deposits. Eventually, states in the North Sea incorporated unitization clauses in maritime delimitation agreements to give a legal effect to transboundary reservoirs. The rule of capture may be transferred to international law in developing transboundary hydrocarbons as states may drill a straddling reservoir without authorisation from the neighbouring state hence explaining the inclusion of unitisation clauses in maritime delimitation agreements.

Under international law, capture occurs when one state (state A) drills and exploits a transboundary reservoir without the consent of the neighbouring state (State B).[134] This scenario can lead to

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immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws"

[130] *Supra note 14*, Vasco Becker-Weinberg says that applying the rule of capture to onshore oil production in the United States of America was the launch of competitive drilling amongst owners of a common hydrocarbon deposit. In most cases, this led to the black gold rush of the 1920s due to the excess of low-cost oil and the rapid exhaustion of resources, as well as to the mismanagement of production and the difficulty in providing adequate storage for oil extracted.

[131] Ibid 55.

[132] *Supra note 14*, Pooling is the joining land to create a single-well drilling unit and maintain spacing of wells, while unitization consists of two or more operators exploring a hydrocarbon deposit as a single unit, sharing its costs and revenues. See Jacqueline Lang Weaver, *Unitization of Oil and Gas Fields in Texas (Resources for the Future*, Inc.: Washington, D.C., 1986), p. 1.

[133] Getting the Deal Through, Oil Regulation 2012, edited by Bob Palmer (Law Business Research Ltd.: London, 2012)

[134]In Youri van Logchem, 'The Status of a Rule of Capture under International Law of the Sea with Regard to Offshore Oil and Gas Resource Related Activities' (2018) 26 Mich St Int'l L Rev 195, Rule of capture was recognized in the USA

competitive drilling when the neighbouring state (state B) drills the same transboundary reservoir without informing state A. For competitive drilling to exist, there must be a hydrocarbon reservoir shared by two states. In overlapping maritime areas, provisional cooperation mechanisms stipulated under articles 74 and 83 of UNCLOS are applied to prevent one state from taking hydrocarbons to the detriment of another state. Articles 74 and 83 encourage states to enter provisional arrangements of a practical nature to explore and exploit hydrocarbons in overlapping maritime areas. Provisional arrangements of practical nature should not jeopardise final delimitation. Interim arrangements discourage the unilateral exploitation of resources found in overlapping maritime areas.

When a maritime boundary line exists, there is no express rule under international law restricting states from exploiting a straddling reservoir.[135] In the absence of an express probation, it can be construed to mean that international law allows competitive drilling. However, unregulated competitive drilling of a straddling deposit can be detrimental to the state and the marine environment because of the economic benefits derived from hydrocarbons.[136] Most states are against unsustainable and detrimental competitive drilling of transboundary reservoirs. Unilateral drilling of transboundary hydrocarbon reservoirs without informing the neighbouring state may lead to economic loss and conflict.

From state practice, it is apparent that international law is against unilateral capture of reservoirs in overlapping maritime areas and delimited maritime areas. Where a maritime boundary line is

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domestic laws in the context of onshore oil and gas production. Under the rule, if a landowner's oil and gas extended beyond his to another person's land, he had a right to drill the oil on his land and produce the oil extending into the neighbor's land. This promoted competitive drilling as both owners struggled to drill the same reservoir from their sides of the land.

[135] In Cote d' Ivore/Ghana, Ghana undertook a preliminary step in exploiting the hydrocarbons existing in the disputed maritime area before the maritime judgement. In East China Sea, China has supported it's right to explore resources found on its side of the maritime boundary between China and Japan. Prior to the unitization agreement between Angola and Democratic Republic of Congo, Congo attempted explore and hydrocarbons without the consent of Congo.

[136]Youri van Logchem, 'The Status of a Rule of Capture under International Law of the Sea with Regard to Offshore Oil and Gas Resource Related Activities' (2018) 26 Mich St Int'l L Rev 195

clear, there is no explicit legitimization of the rule of state capture under international law.[137] States can undertake seismic studies on the continental shelf without obtaining consent from the neighbouring state. States can undertake Seismic studies in overlapping maritime areas and delimitated maritime zones. Seismic studies aid a coastal state in collecting data for further development. In *Guyana v Suriname* and the *Aegean Sea Continental Shelf Case,* Seismic studies were the only unilateral activities of the seabed for which it was accepted that they could be legally undertaken in overlapping areas. In *Ghana/Cote d'Ivoire*, Ghana continued with unilateral exploration activities in the overlapping maritime area. In *Guyana/Suriname*, the tribunal pointed out the obligation to not hamper is a specific obligation to the general principle to settle disputes peacefully.[138] It explained the economic implications of such unilateral actions. From the above caselaw, prohibition is limited to unilateral exploration and exploitation activities in overlapping maritime areas. In addition, the obligation to inform arises upon discovery of a hydrocarbon reservoir.

As discussed above, states have differing views on competitive drilling of shared hydrocarbon deposits. Several unitization treaties involving hydrocarbons that straddle the maritime boundary were signed to prevent competitive drilling by states.[139] Some states have express prohibition of competitive drilling in their national laws. However, the national law is restricted to reservoirs discovered within the jurisdiction of a state. The prohibition cannot be extended to transboundary reservoirs without the consent of the neighbouring state. It is imperative to note that national law on mandatory unitisation cannot apply to transboundary resources due to the nature of private rights involved and international law at play. In such a scenario, states establish cooperation

[137] The rule of capture has been practiced by some states

[138] Ibid 169 Para. 467-468, the tribunal considered unilateral acts such as Seismic studies to be activities that do not cause physical change hence permissible as they do not hamper the final delimitation. The Court indicated that Seismic studies are transitory in nature because they do not involve the risk of physical damage to the seabed

[139] In *Agreement Concerning Delimitation of the Continental Shelf between the Kingdom of Saudi Arabia and the Government of Bahrain, Riyadh, signed and ratified February 22, 1958,* Bahrain and Saudi Arabia adopted unitization of the shared hydrocarbon deposit. See also Agreement between the Government of the United Kingdom of Northern Ireland and the Government of the Kingdom of Norway Relating to the Exploitation of the Frigg Field Reservoir and the Transmission of Gas Therefrom to the United Kingdom, London, May 10, 1976, Timor Sea Treaty between the Government of East Timor and the Government of Australia, Dili, May 20, 2002, in force 2 April 2003,

mechanisms acceptable under international law to protect private investors in transboundary reservoirs through JDAs. Unitisation clauses in maritime delimitation agreements legitimize cooperation between states sharing a transboundary deposit.

In absence of clarity on competitive drilling, other actors have maintained that the rule of capture does not apply in international law.[140] State practice on shared hydrocarbon deposits may be interpreted to mean that competitive drilling is discouraged under in international law because most states prohibit it in their national laws.[141] Most JDAs and Unitisation Agreements do not permit competitive drilling. Where states do not agree on unitisation of transboundary reservoirs, the obligation to share information binds them.[142]

2.2.2.2. The Duty to Cooperate

Joint development of transboundary reservoirs. An operator can enter the neighbouring state when using directional drilling to extract hydrocarbons, violating the neighbouring state's territorial integrity by extracting its oil and gas without authorisation. The use of directional drilling violates the of a coastal state not to cause material damage to a neighbouring state.[143] In addition, directional drilling violates the obligation to share information and consult with the neighbouring state on shared natural resources.[144] States are encouraged to cooperate and jointly develop a shared hydrocarbon reservoir to prevent competitive drilling to avoid hostilities. Joint development of transboundary reservoirs requires political goodwill and an excellent neighbourly relationship between the two states. Strained relationships make it difficult for states to jointly develop

[140]Youri van Logchem, 'The Status of a Rule of Capture under International Law of the Sea with Regard to Offshore Oil and Gas Resource Related Activities' (2018) 26 Mich St Int'l L Rev 19

[141] ILC Report on principles of International Law

[142] Page 46, duty to inform.

[143] Rabiei Majd, S. (2022). Fair and Equal Exploitation of Transboundary Natural Hydrocarbon Based on International Law and Standards. *Economics and Business Quarterly Reviews*, 5(4), 47-66.

[144] Art 3 of Resolution 3281 of the Charter of Economic Rights and the Duties of states,

straddling reservoirs. In such scenarios, the first stage is to establish whether any international law applies to the fluid nature of hydrocarbons and whether state practice establishing a customary rule of law exists. The second stage is to establish whether international law bestows upon states sharing a transboundary reservoir the duty to explore, exploit and management of transboundary hydrocarbon fields.

International law encourages states to cooperate in the exploration, exploitation and management of a transboundary hydrocarbon fields. UNCLOS has no express requirement for states to cooperate where existing or potential hydrocarbons straddle the maritime boundary of two or more states. Though there is no provision in UNCLOS or the Geneva Convention that directly relates to transboundary reservoirs, cooperation protects the sovereignty of states over the shared hydrocarbons.[145] The 1958 Convention on the Continental Shelf did not consider hydrocarbons that straddle the boundary line.[146] Due to the absence of multilateral treaty on straddling hydrocarbons, the only option is to encourage states to cooperate. Cooperation prevents conflicts that may arise from unilateral development of shared resources.

As discussed above, there is no express provision or crystalized customary law on the duty to cooperate in the management of a straddling hydrocarbon reservoir. In absence of an express provision on transboundary reservoirs, the duty cooperate in straddling reservoirs can be drawn from other sources of law touching on similar resources. Under the VCLT, bilateral treaties signed by states create binding legal obligations under international law. Joint development agreements signed between states sharing oil and gas reservoirs legally bind parties and cannot be repudiated

[145] UNGA Resolution 1803 XVII of 14th December 1962: Permanent sovereignty over natural resources states that Every state has, and shall freely exercise, full permanent sovereignty over all its wealth, natural resources, and economic activity"

[146]yler, T. J., Loftis, J. L., Hawker, E. E., Vizcarra, H. V., & Khan, M. I. (2013). "Developing Arctic Hydrocarbon Resources: Delineating and Delimiting Boundaries for Field Development in the Arctic". In *The Regulation of Continental Shelf Development*. Leiden, The Netherlands: Brill | Nijhoff. Available on https://doi.org/10.1163/9789004256842_018 See also Oystein Jensen, 'The Barents Sea' (2011) 26 Int'l J Marine & Coastal L 151

without legal implications. They create binding obligations to not undertake unilateral development and exploitation of a transboundary reservoir.

The preamble of the VCLT, a source of international of law recognizes the principles of free consent and good faith through which states can draw the duty to cooperate. In relation to transboundary reservoirs, the general duty to cooperate arises from established obligation bestowed upon states to not cause significant environmental harm to another state.[147] Further, the VCLT bestows upon all states the duty to negotiate in good faith. Article 300 of UNCLOS contains the general requirement for states to act in good faith when fulfilling their obligations under the Convention. States are required to act in good faith and respect sovereign rights of other states when exploring, managing and exploiting the seabed resources. When a transboundary reservoir is discovered, the obligation to not cause harm to a neighbouring state arises. As a result, a state has an obligation to inform and consult the neighbouring state arises.[148]

Though less authoritative, UNGA resolutions play a persuasive role in the development of international law. Principles adopted and signed through UNGA may act as an agreement by consensus.[149] In addition, recommendations made by the ILC can lead to codification of some principles. UNGA adopted the principles of cooperation among states in the field of environment concerning shared natural resource.[150] In a bid to codify the general duty to cooperate, UNGA adopted the resolution to have two or more states sharing natural resources to cooperate through prior sharing of information and consultation.[151] UNEP drafted principles in 1978 to encourage states sharing natural resources to cooperate in the equitable utilization of the shared natural

[147], Pages 22–44, https://doi.org/10.1093/yiel/yvaa070 accessed on 16.12.2022 at 11.00pm.

[148] Page 48, duty to inform

[149] Malcom N. Shaw, International Law, sixth edition, Cambridge University Press, Cambridge (2008), pg. 903-906

[150]UNGA resolution on co-operation in the field of the environment concerning natural resources shared by two or more States adopted on 13th December 1973

[151]Article 3 of the 1974 Charter of Economic Rights and Duties of States, Resolution 3281 states that in the exploitation of natural resources shared by two or more countries, each State must co-operate on the basis of a system of information and prior consultations in order to achieve optimum use of such resources without causing damage to the legitimate interest of others

resources.[152] Though UNGA resolutions express the need for cooperation, by their nature, they do not create a legal obligation.

The 1958 Convention on the Continental Shelf and UNCLOS did not confer obligations on States to cooperate when a maritime boundary is found to have divided a hydrocarbon deposit. Articles 74 and 83 of UNCLOS expresses possible cooperation mechanisms on provisional arrangements of a practical nature in undelimited EEZ and continental shelf prior to final delimitation. The use of the phrase "*shall make every effort"* in "the States concerned, in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement" is not mandatory. The Court clarified this position in *Cameroon/Nigeria,* where it interpreted phrase "*every effort*" to mean attempts to negotiate but clarified that it's not mandatory for the parties to reach an agreement. Encouraging states try to cooperate is not an indication of an obligation to reach an agreement. In *Ghana/Cote d'Ivoire,* the tribunal held that article 83(3) do not amount to obligation to reach an agreement.[153]

UNCLOS in Article 123 encourages states bordering an enclosed or semi enclosed sea to cooperate when exercising their duties. It indicates that states bordering an enclosed or semi-enclosed sea should try to cooperate with each other in the exercise of their rights and performance of their duties under this convention. Though the provision is an indication of progressive development in the creation of the duty to cooperate, the wording of the article is not obligatory. The provision does not contain an obligation to cooperate. The provision is general on cooperation in the conservation enclosed and semi-enclosed sea and not specific to hydrocarbons.

The only explicit reference to straddling hydrocarbon in UNCLOS refers to analogous resources lying across the national jurisdiction and the Area. Analogous resources are resources lying across in the seabed and subsoil of national jurisdiction and the Area. Article 142 that establishes explicit guidelines for the contact of interested parties in the exploitation resources straddling beyond the limits of the national jurisdiction and the Area. Article 142 requires states to pay due regard to the

[152] 1978 UNEP Draft Principles

[153] *15. Dispute concerning delimitation of the maritime boundary between Ghana and Côte d'Ivoire in the Atlantic Ocean (Ghana/Côte d'Ivoire), Provisional Measures*

legitimate rights of other states when undertaking activities on resource deposits that straddle the national jurisdictional and the Area. Article 142 creates a general obligation to cooperate regarding the exploration and exploitation of resources that straddle between the continental shelf and the area. The general obligation to cooperate can be undertaken through prior notification to avoid infringement on the rights of the neighbouring state. Due to it's nature, risks associated with the exploitation of transboundary reservoir may interfere with the rights of a neighbouring state over the EEZ. Though not strictly obligatory, neighbouring states should share information on the discovery of a transboundary reservoir due to the environmental impacts of such activities. By virtue of this, the obligation to cooperate is limited to hydrocarbon deposits that straddle the continental shelf to the area and not maritime boundaries.

The general to cooperate in transboundary natural resources arises from an economic and environmental obligations.[154] State practice indicates that economic interests motivate states to cooperate in the developing resources straddling their maritime boundaries. This indication is proved by unitization agreements in the North Sea. The intention to prevent states from undertaking unilateral development of straddling hydrocarbon reservoirs motivated some states to enter joint development arrangements.[155] It has been argued that the need to lower costs of production and maximize profits from offshore reservoirs could have motivated some joint development agreements. Another incentive for cooperation is to protect their sovereign rights to the petroleum in place without jeopardizing the interests of other states. Though these indications are beyond the scope of UNCLOS, the above state practice based on bilateral agreements between states show the willingness of states to jointly shared transboundary oil and gas. In addition, the state practice, and actions of ILC and UNGA may be argued to be indicative of the international community's willingness to be guided by the principles contained in the resolutions on cooperation.

Under article 192, all states have the duty to protect the marine environment against pollution. Further, several environmental protection instruments encourage states to cooperate in shared

[154] Tyler, T. J., Loftis, J. L., Hawker, E. E., Vizcarra, H. V., & Khan, M. I. (2013). "Developing Arctic Hydrocarbon Resources: Delineating and Delimiting Boundaries for Field Development in the Arctic". In *The Regulation of Continental Shelf Development*. Leiden, The Netherlands: Brill | Nijhoff. doi: https://doi.org/10.1163/9789004256842_018

[155] Ibid 37

hydrocarbon resources. The UNEP draft Principles encourage States sharing natural resources to cooperate to conserve and utilize them in a harmonious manner.[156] This requirement is transformed into specific commitments like sharing of information, notification and consultation between states sharing natural resources.[157] The UNEP principles reflect the obligation of states to prevent transboundary harm and a duty to undertake an Environmental Impact Assessment. This is to ensure neighbouring states obtain optimum utilization of shared natural resources.[158]

The general obligation to not cause harm to a neighbouring state has been set out in UNCLOS. This obligation bestows upon states the duty to ensure all activities undertaken within their jurisdiction do not cause harm to the neighbouring state. The obligation to prevent harm to another state assigns a state a duty to inform the neighbouring state all activities being undertaken in its continental shelf. The ILC articulated the obligation to cooperate in the management of aquifers. However, the codification of shared oil and gas reservoirs was called off due to existing state practice on cooperation.[159] During the codification process, most states were against codifying general rules on shared hydrocarbon resources due it's private nature and existing state practice through bilateral joint development and unitization agreements.[160] Unlike transboundary aquifers, a regulated priority area, ILC discontinued the process of creating binding rules for straddling hydrocarbons. According to ILC, the strategic, economic and developmental importance of oil and gas of great strategic and already existing state practice elucidating general principles and trends

[156] Report of the Intergovernmental Working Group of Experts on Natural Resources Shared by Two or More States on the Work of its Fifth Session Held at Nairobi from January 23, February 7, 1

[157] ibid

[158] The United Nations Convention on the non-navigational uses of international water course, 1997

[159] Shinya Murase in ILC document A/CN.4/621 Shared natural resources: feasibility of future work on oil and gas notes that many states were against codification of shared oil and gas due to the bilateral nature, diverse regional, physical and geological situation; while some delegates stated that the principle of equitable utilization applies to straddling oil and gas deposits, majority agreed that joint development agreements is a practical way of addressing the problem of shared hydrocarbon resources.

[160] ILC report on shared hydrocarbons. ILC guides UNGA on emerging areas of which need codification, undertakes legal research on the subject issues and draft articles for resolution

is not comparable to aquifers.[161] Following advice from ILC, further deliberations on developing international rules on shared hydrocarbons were called off.

The Convention on shared water courses sets forth elaborate procedures through which states can cooperate to attain equitable and reasonable utilization and adequate protection of shared water resources. It emphasises the need for states sharing watercourses to cooperate through notification, consultation and negotiation. The treaty encourages states to adopt joint management measures and unitize shared watercourses. Cooperation among states is to ensure the equitable utilization of shared watercourses. Through this, states can benefit from to shared watercourse without infringing on the rights of another state.[162] Though the practice of shared water courses crystalized the duty to cooperate, the same cannot be applied to straddling hydrocarbons.[163] The treaty encourages states to adopt joint management measures and unitization of shared water courses.[164]

Collaboration among states is instrumental in ensuring safety and security at sea. Under UNCLOS, states must cooperate in the repression of piracy in any other place outside their jurisdiction.[165] Piracy, terrorist attacks and armed robberies are some risks that may befall offshore oil and gas installations and platforms.[166] The duty to cooperate in good faith in suppressing terrorist and piracy activities bind all states.[167] Through cooperation states can achieve best management practices and common goals.

Generally, cooperation is critical for peace, stability and economic prosperity of states. One of the purposes of the UN as an international organization is to achieve international cooperation in solving international economic, social, cultural, or humanitarian problems.[168] Article 1(3) of the

[161] Report of the International Law Commission on the work of its fifty-ninth session (2007)

[162] Supra, Articles 2, 4, 5 and 8.

[163] Christina Leb, *Cooperation in the Law of Transboundary Water Resources,* Cambridge University Press (2013)

[164] Owen Mcintrye, *Environmental Protection of International Watercourses under International Law,* Routledge, London & New York (2016).

[165] Article 100 of UNCLOS

[166] Article 192 of UNCLOS

[167] Article 193 of UNCLOS

[168] Article 1(3) of the UN Charter

UN charter stipulates principles that all members and organizations respect. To achieve international cooperation, negotiation in good faith is mandatory.[169] UN Charter on economic rights and duties of states encourages states to cooperate in the exploitation of shared natural resources.[170] UNGA's Declaration on Principles of International Law concerning Friendly Relations and Cooperation among States reaffirms the general duty to cooperate.[171]

2.2.2.3. Duty to negotiate in good faith

The duty to negotiate in good faith is a well-recognized principle of international law. The duty to negotiate in good faith is an obligation of cooperation under international law aimed at having states reach an agreement.[172] International law obliges states to negotiate in good faith regarding the protection and conservation of transboundary natural resources especially shared watercourses, straddling fisheries and hydrocarbons. In a transboundary reservoir, a state must reconcile its rights of exploitation of the hydrocarbon and the obligation to protect the interests of the neighbouring state in the reservoir. This requirement creates obligations between the parties to negotiate in good faith with the aim of avoiding or solving a conflict over the shared deposits.[173] Through good faith, neighbouring coastal states can agree on the mode of sharing straddling resources and types of concession agreements that can be signed to operate a joint development mechanism. The Arbitral Tribunal in *Guyana v Suriname*[174] reinforced the duty to cooperate stipulated in Articles 73 and

[169] Article 2 of the UN Charter

[170] Charter of Economic Rights and Duties of States General Assembly resolution 3281 (XXIX)

[171] Declarations on Principles of International Law concerning Friendly Relations and Cooperation among states in accordance with the charter of the United Nations General Assembly resolution 2625 (XXV)

[172]S Rosenne Developments in the Law of Treaties 1945-1986 (Cambridge University Press 1989) at 175 (referring to the general role of good faith in decision-making, whether in a second or third-party context). See also Cameron Hutchison 'The Duty to Negotiate International Environmental Law Disputes in Good Faith' (2006) 2 McGill International Journal of Sustainable Development Law and Policy (forthcoming).

[173] Malcom N. Shaw, *International Law,* sixth edition, Cambridge University Press, Cambridge (2008), pg. 903-906

[174] Arbitral Tribunal Constituted Pursuant to Article 287, And in Accordance with Annex Vii, of the United Nations Convention on the Law of the Sea in the Matter of an Arbitration Between Guyana and Suriname, the Arbitral Tribunal stated that *"Although the language 'every effort' leaves 'some room for interpretation by the States concerned …' it is the opinion of the Tribunal that the language...imposes on the Parties a duty to negotiate in good*

83 of UNCLOS. The Court took the view that Articles 73 and 83 of UNCLOS were to promote provisional practical measures of exploiting resources in overlapping maritime areas pending delimitation of the maritime boundary. Though referring to provisional measures only, this decision reinforces the duty to negotiate in good faith. The duty stipulated in Article 83(3) applies to joint development arrangements entered prior to final delimitation of the maritime boundary. The obligation stipulated in articles 83(3) and 300 creates a duty to act in good faith. This duty is to be undertaken in the spirit of cooperation.[175]

The main aim is for parties to strive to reach an agreement by accommodating the rights of each other. The principle of a duty to negotiate in good faith is a collaborative strategy aimed at concluding an agreement between states. While parties are called upon to put aside competing interests and reach a common goal, there is no obligation to conclude an agreement.[176] Some sources consider the duty to negotiate in good faith vague due to its inability to solve some of the disputes arising from shared natural resources.[177]

When resources that straddle the maritime boundary of two states or beyond the EEZ are discovered, the duty to cooperate in good faith arises. [178]However, parties are not under an

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faith. Indeed, the inclusion of the phrase 'in a spirit of understanding and cooperation indicates the drafters' intent to require of the parties a conciliatory approach to negotiations, pursuant to which they would be prepared to make concessions in the pursuit of a provisional arrangement. Such an approach is particularly to be expected of the parties since any provisional arrangements arrived at are temporary and will be without prejudice to the final delimitation."

[175] Ibid 235

[176] Gabcikovo-Nagymaros at para. 141. The Court stated that while efforts are to be strong, there is no obligation to conclude an agreement: see Lac Lanoux (n 1) at 140; United States—Import Prohibitions of Certain Shrimp and Shrimp Products, Recourse to Article 21.5 of the DSU by Malaysia WT/DS58/AB/RW (2001) para. 123-4. 5

[177] Hutchinson, Cameron. "The Duty to Negotiate International Environmental Disputes in Good Faith." McGill International Journal of Sustainable Development Law and Policy, vol. 2, no. 2, 2006, pp. 117-154. See also Reynolds, Thomas A. "Delimitation, Exploitation, and Allocation of Transboundary Oil & Gas Deposits between Nation-States." ILSA Journal of International & Comparative Law, 1, 1995, pp. 135-170.

[178] Article 78(1) of UNCLOS, the rights of the coastal State over the continental shelf do not affect the legal status of the superjacent waters or of the air space above those waters.

obligation to reach an agreement. In the *North Sea Continental Shelf Case*[179], the ICJ held that the duty to cooperate entails more than the formal process, but the negotiations must be meaningful. This ensures equitable and efficient utilization of the straddling resources by both states,[180] cooperation is encouraged.[181] In order to utilize these resources equitably, states are encouraged to cooperate. To achieve this, parties should balance each other's rights to the transboundary reservoir.

2.2.2.4. The Duty to inform

The duty to inform is a subsidiary obligation bestowed upon all states as a minimum requirement when undertaking activities that may cause harm to the environment. Procedural obligations bestow upon states the duty to take all measures to prevent pollution from activities undertaken on its continental shelf. Where an activity is likely to cause transboundary pollution, have a duty to assess the environmental impact of the activity. Article 206 requires undertaking an environmental impact assessment for activities with potential environmental impact before undertaking the project.[182] Hydrocarbon activities are potential pollutants of the marine environment which create an obligation to cooperate. The duty to notify other states at an early stage enables it to assess whether the proposal might cause significant environmental harm. The ICJ in the *Pulp Mills case* held that the duty to cooperate was facilitated by the duty to notify the other State at an early stage to enable it to assess whether the proposal might cause significant harm.[183]

The duty to inform arises when a transboundary reservoir is discovered to avoid infringement on the neighbouring state's sovereignty. International law sets minimum requirements of the duty to

[179] Ibid note 37

[180] Article 142(1) of UNCLOS, activities in the Area, with respect to resource deposits in the Area which lie across limits of national jurisdiction, shall be conducted with due regard to the rights and legitimate interests of any coastal State across whose jurisdiction such deposits lie.

[181] UNCLOS preamble paragraph 3.

[182] Article 206 of UNCLOS states that When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments in the manner provided in article 205

[183] Pulp Mills On The River Uruguay (Argentina V. Uruguay) par. 104-105

inform, consult and seek an agreement from a neighbouring state where a hydrocarbon reservoir straddles the maritime boundary. In USA/Mexico agreement, parties acknowledged the importance of information sharing. They agreed that if they have differing views on the unitization of a transboundary reservoir, either State can develop the reservoir and share all the data on production.[184]

States can cooperate through sharing information and prior consultation. The Rio Declaration Principle 19 recommends that states shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith. The use of "shall" means a mandatory obligation bestowed upon states to share information. Prior information and notification enable neighbouring coastal states make informed decisions on actions taken by another state especially if such actions are likely to cause harm. Information and data on environmental risks can be shared through international organizations. Sharing data through international organisations enhances regional cooperation in the prevention of environmental risks especially pollution from hydrocarbon exploration and exploitation activities.

Sharing information enables states to make optimum use of such shared resources without breaching the legitimate rights and interests of other states.[185] The General Assembly emphasizes the necessity to establish adequate international standards for the conservation and harmonious exploitation of natural resources common to two or more States by developing a cooperation system of information sharing and prior consultation.[186] The message enshrined in these UNGA resolutions is that states must cooperate before exploiting natural resources. Though this does not

[184] Ibid page 64

[185] Charter of Economic Rights and Duties of States provides that in the exploitation of natural resources shared by two or more countries, each State must co-operate based on a system of information and prior consultations in order to achieve optimum use of such resources without causing damage to the legitimate interest of others. General Assembly Resolution 3281 (XXIX) adopted on 12 December 1974

[186] Article 3 of the UN Charter on Economic Rights of states, UNGA Resolution 3129 (XXVIII)

confer a mandatory obligation on states to cooperate, information sharing regarding activities that may cause transboundary pollution are mandatory.

Articles 56(2) and 58(3) of UNCLOS require states to pay due regard to the interests and freedoms of other states in the EEZ. The principle of due regard is crucial in preventing conflicts that may arise from the use of the EEZ. The obligation to pay due regard to other states arises when activities undertaken by one state can affect the rights of adjacent or other third states from exercising their rights over the EEZ. In transboundary deposits, pollution from drilling and exploitation activities undertaken close to the maritime boundary is like to cause harm to the maritime zone of the neighbouring state. Such transboundary pollution can negatively impact a neighbouring state from exercising its rights over its EEZ. Article 197 sets out the international obligation to cooperate in protecting the marine environment. Cooperation can be done through international and regional organizations.[187] Information sharing is advised where activities in the continental shelf may interfere with another state's EEZ or continental shelf. UNCLOS emphasizes the exclusive rights of states' resources on the continental shelf.[188]

2.2. SECTION B: JOINT DEVELOPMENT ARRANGEMENTS

Concessions for the exploration and exploitation of hydrocarbon resources are private contracts between states and private entities. National laws of coastal states issuing licenses for offshore oil and gas activities regulate activities undertaken by Private entities. Exploration and exploitation activities are therefore limited to the maritime jurisdiction of the State issuing the license. In a transboundary reservoir, private entities must be authorized by the licencing states. In such a case, a legal framework must exist between the states to facilitate the formation of a joint venture between the contractors. State practice demonstrates that through bilateral agreements, coastal

[187] Article 195 of UNCLOS states that States shall cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.

[188] Article 78 of UNCLOS

states can form joint bodies governed by their national laws or agree on unitization arrangements creating certainty over straddling hydrocarbon resources.

The legal and technical challenges encountered when exercising exclusive rights due to the nature of a transboundary reservoir encourage the formation of JDAs as a legal solution to the practical challenge.[189] This section analyses cooperation arrangements in transboundary hydrocarbon deposits.

2.2.1. Joint Development Agreements and Unitisation Agreements

JDAs and UAs are bilateral cooperation agreements between two or more states to share natural resources. Joint development is a cooperation strategy between states for promoting collaboration in maritime areas with potential conflicts. They are signed between two or more states for the exploration and exploitation of living and non-living resources (fisheries and hydrocarbons) straddling the maritime boundary or overlapping claims.[190] Two or more states pool any rights that they have over a shared area or undertake joint management for purposes of exploring and exploiting offshore non-living resources.[191] Townsend Gault defined joint development as a choice by one or more countries to pool their rights. Cooperative efforts are made by two or more states to explore and exploit minerals found in overlapping claims or straddle the maritime boundary.[192]

[189] Ana E. Bastida, Adaeze Ifesi-Okoye, Salim Mahmud & James Ross, 'Cross-Border Unitization and Joint Development Agreements: An International Law Perspective' (2007) 29 Hous J Int'l L 355

[190] Vasco Becker-Weinberg, *Theory and practice of joint development in international law, in: Cooperation and Development in the South China Sea*, edited by Zhiguo Gao, Yu Jia, Haiwen Zhang and Jilu Wu (China Democracy and Legal System Publishing House: Beijing, 2013), p. 85. Vasco Becker-Weinberg defines joint development agreements as self-regulating conventional instruments subject to international law, signed between two or more States holders of a legal title, although independent of such rights as claimed by the intervening States, concerning the maritime areas where natural resources are found in the seabed and marine subsoil, as well as undertaking of all activities deemed necessary without foregoing the rights and freedoms of third States granted under international law.

[191] John Abrahamson, *Joint Development of Offshore Oil and Gas Resources in the Arctic Ocean Region and the United Nations Convention on the Law of the Sea*, Brill, 2013.

[192] Ibid 183

Unitisation occurs where the accumulation of hydrocarbons within a host rock takes no account of the international boundaries or exploration and development licenses.[193] Unitisation formalizes the development of petroleum accumulation, straddling the maritime boundary to avoid wasteful competitive drilling, which weakens the recovery of petroleum. Unitisation agreement is a form of JDA restricted to a specific unit deposit/ reservoir.

Parties to JDAs and Unitisation agreements agree on the legislative framework to be implemented in the JDZs and unit deposits. Joint development agreements and transboundary unitization agreements are used in these circumstances to safeguard the deposit's unity while respecting the concerned states' natural sovereign rights. These cooperation mechanisms are influenced by the coastal states' legal, technical, political, environmental and economic interests.[194] The political good will and uniform legal regime ensures implementation of these agreements. Therefore, members must agree on the licencing fiscal regime, immigration laws and safety and inspection measures.

Under international law, developing offshore hydrocarbon deposits that straddle the maritime boundary of the two or more coastal states remains a problem. The ICJ in the *North Sea Continental Shelf*[195] noted wasteful exploitation risks that can arise from shared hydrocarbon deposits.[196] Through cooperation, states can conclude joint development agreements or unitisation agreements in respect of the straddling hydrocarbons. For exploration and exploitation of living and non-living resources, coastal states exercise different rights and obligations in each maritime

[193] Al Hudec & Van Penick, 'British Columbia Offshore Oil and Gas Law' (2003) 41 Alta L Rev 101, see also Skaten, M. 2018. “Ghana’s Oil Industry: Steady Growth in a Challenging Environment.” OIES Paper. Oxford Institute for Energy Studies; Ong, D. (1999). Joint Development of Common Offshore oil and Gas Deposits: “Mere” State Practice or Customary International Law? *American Journal of International Law, 93*(4), 771-804. doi:10.2307/2555344.

[194] Regime of the EEZ and the Continental Shelf, Virginia’s commentary on Law of the Sea

[195] [1969] ICJ REP. 51, para. 97 the ICJ noted stated that “it frequently occurs that the same deposit lies on both sides of the line dividing a continental shelf between States, and since it is possible to exploit such deposit from either side, a problem immediately arises on account of the risk of prejudicial or wasteful exploitation by one or the other of the States concerned

[196]Ibid note 28

area. The maritime zones in which these resources are situated determine the modality of joint management.

Joint Development Agreements are mainly used in overlapping maritime claims as provisional arrangements of practical nature pending final delimitation. In overlapping maritime areas, JDAs act as provisional intergovernmental arrangement aimed at enabling the two states jointly exploring for or exploiting hydrocarbon resources in the continental shelf before finalisations of delimitation. Where delimitation of the EEZ and Continental shelf is by agreement, states have included JDA clauses in delimitation agreements.[197] JDZ where the two states can jointly manage, conserve, explore and exploit living, and non-living resources is agreed upon.[198] They share proceeds of the offshore oil and gas in a designated JDZ of the seabed and subsoil of the continental shelf to which both or either of the participating states is entitled under international law. Under a JDA framework, parties can agree to exploit a hydrocarbon existing in an already designated zones like *Nigeria/Sao-Tome Principe* or in another state's maritime area within the JZZ like *Saudi Arabia/Bahrain*[199]. In *Bangladesh v Myanmar*[200], ITLOS acknowledged the importance of cooperative arrangements between states. It states that states can use cooperative arrangements or an agreement to solve practical problems that cannot be solved by maritime delimitation.

[197] Articles 74(3) and 83(3) of UNCLOS

[198] Vasco Becker-Weinberg, *The internationalization of marine natural resources in UNCLOS in: Recent Developments in the Law of the Sea*, edited by Rainer Lagoni, Peter Ehlers and Marian Paschke (LIT Verlag: Berlin, Munster, Vienna, Zurich, London, 2010), pp. 9–54 describes joint development as a cooperative effort for the internationalization of marine natural resources between two or more States for the exploration and exploitation of offshore hydrocarbon deposits that straddle a boundary line or that are found in maritime areas of overlapping claims.

[199] Agreement Concerning the Delimitation of the Continental Shelf in the Persian Gulf between the Shaykhdom of Bahrain and the Kingdom of Arabia, Riyadh 22 February 1958, ST/LEG/SER.B/16, supra note 31, at 409.

[200] Ibid 63

2.2.2. International Case Law on Joint Development of Transboundary Hydrocarbon Reservoirs

Courts and tribunals have appreciated the importance of cooperation in transboundary oil and gas reservoirs.

1) The 1969 North Sea Continental Shelf Cases

In the North Sea Continental Shelf Cases[201], while defining the equidistance principle of delimitation, the ICJ appreciated the need for cooperation between Denmark, Netherlands and Germany. The ICJ established fundamental principles of maritime delimitation in international law. The Court also clarified the right of every state's entitlement to the continental shelf as a customary law. Justice Jessup's separate opinion illustrated the judicial response to maritime delimitation and cross-border petroleum.

The Court advised parties to consider the possibility of establishing a regime of joint jurisdiction, user or exploitation for zones that overlap with either of them.[202] However, the Court left the final delimitation of the continental shelf to the parties to negotiate and come up with a solution. While acknowledging joint exploitation agreements on shared resources in the Persian Gulf and Ems Estuary, Justice Jessup expressed his views that the principle of joint exploitation might have a broader application in agreements on overlapping areas of the continental shelf that are disputed-that is, yet to be delimited.[203]

The Court recognized the unit of deposits by stating that it did not consider that unity of deposits constituted anything more than a factual element that it is reasonable to consider during the negotiations for a delimitation. Justice Ammuon held that if preservation of the unity of deposit is a matter of concern to parties, they must provide a voluntary agreement.[204] In considering the UK-

[201] Ibid note 37

[202] Ibid, separate opinion of judge Jessup, para. 84, the court states that "the principle of co-operation applies to the stage of exploration as well as to that of exploitation, and there is nothing to prevent the Parties in their negotiations, pending final delimitations, from agreeing upon, for example, joint licensing of a consortium which, under appropriate safeguards concerning future exploitation might undertake the requisite wildcat operations"

[203] Ibid note 270 Para. 83, separate opinion of Judge Ammoun

[204] ibid note 37 para. 148

Norway continental shelf agreement, the Court also held that joint exploitation agreements were appropriate when preserving unit deposits in overlapping but equally justifiable claims.[205] The court acknowledged joint exploitation of petroleum reservoirs straddling the maritime boundary.

2) The 1976 Turkey/Greece Aegean Sea Continental shelf Case[206]

The dispute arose in 1974 when Turkey's unilateral acts led to granting petroleum exploration permits in the Aegean Sea. A portion of the exploration area lay slightly. Outside Greece's territorial waters. Greece objected to Turkey's claim over a portion of the continental shelf. Parties attempted to negotiate, but following a breakdown in subsequent negotiations, Turkey continued with seismic studies in the disputed seabed and continued undertaking scientific studies and navy patrols. Greece submitted a maritime claim to the ICJ objecting to Turkey's activities and requested interim measures. Greece alleged that Greece claimed that granting exploration permits and issuing the exploring vessel infringed on its exclusive sovereign right to exploration and exploitation of the continental shelf. Turkey's actions breached the right of a coastal state to the exclusivity of knowledge of its continental shelf constituted irreparable prejudice. The Court held that it was unable to find such a risk of irreparable prejudice to Greece's rights as might require interim measures of protection

3) The United Kingdom/France Arbitration[207]

The arbitration dispute arose from delimitation of the continental shelf in the English Channel. They held that the delimitation principles requiring the shift of the equidistance rule due to exceptional circumstances, as stipulated in the *North Sea continental shelf cases*, did not apply in this arbitration. Therefore, existing petroleum reservoirs did not constitute circumstances to divert from the equidistance rule.[208]

[205] Ibid 269 Para 99

[206] Aegean Sea Continental Shelf Case (Greece V. Turkey)

[207] Delimitation of the Continental Shelf between the United Kingdom of Great Britain and Northern Ireland, and the French Republic (UK, France) available on https://legal.un.org/riaa/cases/vol_XVIII/3-413.pdf

[208] Ibid 274 par. 75

1. *The Iceland/Norway Conciliation Recommendations on the Continental Shelf Area Between Iceland and Jan Mayen Island*[209]

In May 1980, Iceland and Norway agreed on fisheries and continental shelf questions but left open the issue concerning Iceland's claim to an economic zone on the continental shelf extending beyond the 200 nautical miles in the area near Jan Mayen. Due to potential hydrocarbons in the area, parties disagreed on the continental shelf. Norway did not claim a 200 nautical mile EEZ around the island when it established one around the mainland. Iceland objected to Norway's attempt to correct the omission by claiming an EEZ around the Jan Mayen Island.

The states agreed to establish a Conciliation Commission to consider the issue of the boundary of the continental shelf area between Iceland and Jan Mayen Island. Eventually, a scientific committee was assembled to determine the potential for petroleum deposits in the disputed area. The Commission for the formation of a joint development arrangement for that area where there were significant prospective hydrocarbons. The subsequent signing of the 1981 Agreement on the Continental Shelf between Iceland and Jan Mayen provided for the unitization of transboundary deposits discovered either across the delimitation line or the boundary of the southern part of the EEZ.[210]

2. Eritrea/Yemen - Sovereignty and Maritime Delimitation in the Red Sea[211]

The dispute arose over the sovereignty of the red sea area between Yemen and Eritrea regarding the petroleum arrangements and the maritime boundary. The Tribunal agreed with the North Sea Continental Shelf Cases that delimitation of continental shelf areas might lead to overlapping areas appertaining to them. It states that such a situation must be accepted as a given fact and resolved either by an agreement or, failing that, by an equal division of the overlapping areas or by

[209] Report And Recommendations to The Governments Of Iceland And Norway Of The Conciliation Commission On The Continental Shelf Area Between Iceland And Jan Mayen available on https://legal.un.org/riaa/cases/vol_XXVII/1-34.pdf

[210] Ibid 276 pp. 28-29

[211] Second stage of the proceedings between Eritrea and Yemen (Maritime Delimitation)

agreements for joint exploitation, the latter solution appearing particularly appropriate when it is a question of preserving the unity of a deposit.[212]

3. The Tunisia/Libya Continental Shelf Case[213]

Tunisia and Libya submitted to the ICJ the question of the principles and rules of international law applicable to the delimitation of the continental shelf. The Court reiterated the natural prolongation principle stipulated in the North Sea continental shelf cases but did not specify the concept of "equitable principles" or "exceptional circumstances. The Court stated that though the parties' economic status could not be considered in delimitation, the presence of oil wells in the overlapping area may be considered in the process of weighing an equitable solution.

In his dissenting opinion, Judge Evensen proposed a joint development system of petroleum resources. In his view, development represented an equitable alternative solution to the maritime boundary dispute.[214]

Conclusion

From the above discussion, it is prudent to note that under international law, there is no obligation to cooperate in the development shared oil and gas reservoirs. However, states have a general duty try to negotiate in good faith to reach an amicable solution in the development of shared hydrocarbons. Where states don't reach an agreement, obligation to seek information and notify neighbouring states on all activities likely to cause harm to the marine environment is mandatory and binds all states. There is a general obligation for a country that discovers the straddling deposit to inform its neighbouring state before developing the deposit.

[212] Ibid 277 para. 84

[213] Case Concerning The Continental Shelf (Tunisia/Libyan Arab Jamahiriya)

[214] Ibid 282 Dissenting Opinion Of Judge Evensen Para. 321, 323

PART TWO: STATE PRACTICE ON JDAs, CHALLENGES AND BENEFITS OF JOINT DEVELOPMENT AGREEMENTS AND LESSONS FOR KENYA AND SOMALIA

3. CHAPTER 3: STATE PRACTICE ON THE JOINT DEVELOPMENT OF TRANSBOUNDARY HYDROCARBON RESERVIOR

States come up with a wide range of cooperation mechanisms through which they agree to cooperate and foster good neighbourhood which is beneficial to them and the regions at large as opposed to disputes. Existing state practice shows the prevalence of agreements on the joint development of shared hydrocarbon reservoirs. This chapter discusses the existing JDAs, unitisation agreements the challenges and benefits of jointly developing transboundary reservoirs.

3.1. SECTION A: EXISTING STATE PRACTICE ON JDAs

State practice on joint development of straddling hydrocarbon resources has taken two approaches namely: - unitisation agreements and joint development zones. Some maritime delimitation agreements have a clause on the unitisation of hydrocarbon deposits.[215] Some states have signed framework agreements for unitisation if a straddling hydrocarbon deposit is suspected.[216] Framework agreements are signed between states either during or after delimitation. The simple clause in the delimitation agreement between Norway and the United Kingdom obligated the two states to reach an agreement in case straddling hydrocarbons were to be discovered.[217] Upon discovery of straddling hydrocarbons, framework agreements for individual unit deposits are signed. Unlike UA, JDA clauses take a broader approach by including joint development of all

[215] Article 3 of the 1965 Continental Shelf delimitation treaty between the United Kingdom and states that if any single geological petroleum structure or petroleum field, or any single geological structure or field of any other mineral deposit, including sand or gravel, extends across the dividing line and the part of such structure or field which is situated on one side of the dividing line is exploitable, wholly or in part, from the other side of the dividing line, the Contracting Parties shall, in consultation with the licensees, if any, seek to reach agreement as to the manner in which the structure or field shall be most effectively exploited and the manner in which the proceeds deriving therefrom shall be apportioned.

[216] ibid

[217] Ibid 1

marine resources, protection of the marine environment against pollution and marine scientific research.[218]

Several JDAs and UA have been signed and implemented.[219] They comprise JDAs with one state operating the JZZ and sharing revenue with the other state,[220] agreements with specific state provisions applying in the same JDZ,[221] agreements with each state applying its laws on their respective side of the agreed maritime area in the JDZ area[222] and in principle agreements which have eventually developed into JDZ.[223] In some instances, multilateral treaties allowing multiple states access to resources have been signed.[224] Though not falling entirely into the traditional definition of a JDA, multiple access to a single resource deposit can make it fall into the category of JDAs.[225] The following are examples of existing agreements on joint development arrangements.

3.1.1. Unitisation Agreements

Under AU, states agree to exploit a straddling hydrocarbon reservoir as a single unit with proceeds of production shared between the two states. The sharing formula depends on the percentage agreed upon depending on the amount of oil and gas that straddles the maritime boundary. States

[218]Nigeria/Sao-Tome Principe Maritime delimitation treaty.

[219] 1976 Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Frigg Field reservoir and the Transmission of Gas therefrom to the United Kingdom

[220] 1992 Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petr1oleum in a Defined Area of the Continental Shelf Between the Two Countries, National University of Singapore – Centre for International Law (5 June 1992) at: https://cil.nus.edu.sg/wp-content/uploads/formidable/14/1992-MOU-between-Malaysia-and-Vietnam-for-the-Exploration-andExploitation-of-Petroleum.pdf

[221] Australia/Timor-Leste Agreement

[222] 1981 Agreement between Norway and Iceland on the Continental Shelf between Iceland and Jan Mayen, 2124 UNTS 262 (Norway/Iceland Agreement).

[223] 1979 Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Establishment of a Joint Authority for the Exploitation of the Resources of the Seabed in a Defined Area of the Continental Shelf of the two countries in the Gulf of Thailand, reprinted in Charney and Alexander

[224] Malaysia, Vietnam and Thailand joint area in the Gulf of Thailand

[225] John Abrahamson, *Ocean Region and the United Nations Convention on the Law of the Sea,* Brill (2017)

agree on procedures for the operation of the straddling unit deposit and dispute resolution mechanisms. The following are samples of UAs: -

a. The United Kingdom and Norway

The 1965 maritime delimitation agreement between Norway and UK included a unitization clause for petroleum or minerals that straddle the maritime boundary.[226] Unitization is mandatory when any party discovers a straddling petroleum field that can be wholly or partially exploited from either side of the UK and Norway.[227] The two states must consult their licensees on how a straddling petroleum field can be exploited and apportioned. The first UA was the Agreement between Norway and the UK concerning the Frigg field reservoir. The Frigg unitization agreement created a model for future unitization of straddling hydrocarbons in the North Sea and other regions.[228]

In 1971, the Frigg field reservoir straddling the UK and Norway maritime boundary was discovered.[229] In 1976, the UK and Norway agreed to unitize a shared petroleum deposit at the Frigg oilfield, which straddled the continental shelf of the two states. Subsequently, a framework agreement for the Frigg field reservoir was signed. The Frigg reservoir was apportioned depending on the share found on each maritime boundary. Norway and the UK agreed to develop the reservoir

[226] The Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the delimitation of the continental shelf between the two countries, 10 March 1965

[227] Ibid (7) article 4 state that *"If any single geological petroleum structure or petroleum field, or any single geological structure or field of any other mineral deposit, including sand or gravel, extends across the dividing line and the part of such structure or field which is situated on one side of the dividing line is exploitable, wholly or in part, from the other side of the dividing line, the Contracting Parties shall, in consultation with the licensees, if any, seek to reach agreement as to the manner in which the structure or field shall be most effectively exploited and the manner in which the proceeds deriving therefrom shall be apportioned*

[228] J. C. Woodliffe, *International Unitization of an Offshore Gas Field,* 26 INT'l & COMP. L.Q. 338 (1977).

[229] In R. Maritvold, *Frigg Field Reservoir Management*, North Sea Oil and Gas Reservoirs—II – (1990), the Frigg field straddled the Norwegian - UK border and was situated in block 25/1 on the Norwegian side and block 10/1 on the British side

as a single unit deposit and share the revenue derived from the field and development costs.[230] The framework agreement laid down principles of operation in the single unit deposit. Each state appointed one licensee, who then entered a joint venture to form a single operator for the single unit deposit.[231] Consequently, a single-unit operator (unit operator) through a joint venture (Frigg field operating agreement) between the two operators (operating committee) developed the oil field as a single unit. The responsibility of the licensees was to further the objectives of the Frigg unitization agreement by signing framework agreements with the unit operator and inform the authorities of the home countries and regulate exploitation of the petroleum field.[232] Each state reserved the right to approve its operators' development plans and unitization schemes. The two-tier management system acted as the first step to dispute resolution in case of a disagreement. The licencees were authorized to sign further operational and accounting agreements to facilitate the smooth exploitation of the field.[233]

Amidst the development of the field, the two states maintained their sovereign rights over installations on their continental shelf. Installations in the Frigg field were regulated by the national laws of the parties.[234] Each government reserved the right to determine standards of installation of platforms on its side of the maritime boundary. Each party was obligated to permit an authorized representative of either state to undertake safety inspections on installations on either side. The inspections were undertaken in accordance with the safety guidelines of the states in which they

[230] Article 3 of the UK and Norway framework agreement, 60 per cent of the revenue from the Frigg field was apportioned to Norway and 40 percent to the UK.

[231] Eivind Torheim, *changing perceptions of a gas field during its life cycle: a Frigg field case study* in *Quantification and Prediction of Petroleum Resources* edited by A.G. Dor6 and R. Sinding-Larsen. NPF Special Publication 6, pp. 273-289, Elsevier, Amsterdam. Norwegian Petroleum Society (NPF), 1996.

[232] Ibid 16

[233] Ibid 14

[234] Article 29 of the Frigg Agreement affirms that nothing in the agreement is to be interpreted as affecting "the jurisdiction which each State has under international law over the continental shelf which appertains to it," and makes reference in this connection to installations located on each State's continental shelf.

are irrespective of the inspecting officer.[235] The pipeline and terminal facilities were not included in the unitization agreement and framework agreement.[236]

The primary purpose of the Frigg field UA was to effectively exploit the Frigg field reservoir where the maritime boundary had already been delimitated. This AU explains the general purpose of JDAs as tools for the economical and efficient exploitation of hydrocarbons in already delimitated maritime boundaries rather than temporary exploitation of shared resources where the boundary has not been delimited.

The Frigg UA was followed by two other agreements relating to exploiting the Statfjord and Murchison field reservoirs. The unitization agreement approach in the Frigg's oilfield was adopted in the Markham field reservoirs between the UK and the Netherlands in 1992, save for the field operations.[237]

b. Russia and Norway

Russia and Norway's maritime delimitation treaty stipulates the duty to cooperate between the two countries if a straddling hydrocarbon is discovered. In that case, it may inform the other Party about the existence of the straddling reservoir.[238] The agreement obligates the two states to

[235] In J. C. Woodliffe, International Unitisation of an Offshore Gas Field, 26 INT'l & COMP. L.Q. 338 (1977), a Norwegian inspection officer was authorized to undertake safety inspections on the installations on the UK side in accordance with the UK safety guideline.

[236] Ibid 17, the independent UK and Norwegian groups separately owned the pipelines. Transportation agreements for the pipelines were signed to ensure coordinated transportation. Further, separate agreements for accounting and operations were signed for the two separate terminals, mainly the use of the St. Fergus terminal and the coordination of the use of the two pipelines were signed

[237]Peter D Cameron, *The Rules of Engagement: Developing Cross-Border Petroleum Deposits in the North Sea and the Caribbean,* Cambridge University Press (2008) available on https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=Peter%20D%20Cameron&eventCode=SE-AU

[238] Article 5 of the Treaty between the Kingdom of Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean states that If the existence of a hydrocarbon deposit on the continental shelf of one of the Parties is established and the other Party is of the opinion that the said deposit extends to its continental shelf, the latter Party may notify the former Party and shall submit the data on which it bases its opinion.

undertake compulsory unitisation by exploiting the straddling deposit as a unit. Suppose a party discovers that a hydrocarbon deposit in the continental shelf extends beyond its maritime boundary; parties are under an obligation to exchange exploration data of the straddling deposit. Parties are obliged to exchange information if the deposit extends to or beyond the continental shelf of the other Party. Due to the nature of hydrocarbon exploration, parties have to share information on any activities of the continental shelf that may affect the other parties right over the continental shelf and the EEZ.

c. Iceland and Norway

Iceland and Norway agreement mandates the two states to cooperate in the exploration and exploitation of the continental shelf between Iceland and the Jan Mayen area.[239] Parties agreed to cooperate in connection with exploring and exploiting the hydrocarbon resources within a specified area between Iceland and Jan Mayen. The Agreement obligates the Norwegian Petroleum Directorate to implement seismic studies and magnetic surveys practically. The survey plans are to be reviewed by Norwegian and Icelandic experts participating in data collection.[240] Iceland and Norway's joint development takes a holistic approach by sharing information on shared minerals and managing joint fisheries. The parties undertake to cooperate and initiate consultations in connection with any exploration and exploitation of the continental shelf activities that are likely to endanger the living resources in the joint development area.[241] Parties submit should submit to each other specific development in connection with the exploration and exploitation of the continental shelf prior to the commencement.

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[239] Agreement on the Continental Shelf Between Iceland and Jan Mayen, 22 October 1981 was signed following conciliation commission's unanimous recommendations for a joint zone and continental shelf delimitation line

[240] Willy Streneng*, Reaching Agreement on International Exploitation Of Ocean Mineral Resources (With Special Reference To The Joint Development Area Between Jan Mayen And Iceland*, Energy Vol. IO. No. 314. PP. 555-571. 1985

[241] Article 10 of the agreement between Norway and Iceland on fishery and continental shelf questions stipulates that In the event of activities taking place on the shelf areas between Iceland and Jan Mayen in connection with the exploration for or exploitation of the natural resources on or in the shelf, the Parties undertake to initiate close mutual consultations and close cooperation with regard to the adoption and enforcement of the necessary safety regulations in order to avoid any pollution which might endanger the living resources in these sea areas or otherwise have a harmful effect on the marine environment.

d. Canada and France[242]

The Canada/France delimitation agreement prescribed procedures for information sharing between the two states. Canada and France are required to share the results and data of any well drilled within 10 NM of the maritime boundary within 60 days of receiving the information from the licensee. Where one state's belief that the discovered accumulation of hydrocarbon is non-transboundary is rejected by the other state as per the conclusions in the notice,[243] the two states may refer the matter to a single expert whose conclusion is binding. Once the two states agree that there is a transboundary hydrocarbon deposit, the licensee is obliged to share more information on the straddling deposit. If the exploration proceeds to the production stage, the agreement obligates the state that issued the license to initiate and agree on the terms of exploitation of the straddling hydrocarbon. In the exploitation agreement, the two-state parties have an obligation for continued the exchange of information pertaining exploitation of the hydrocarbon.[244]

This agreement stipulates the mandatory procedural obligation to share information in situations where the two states are unable to reach an agreement on the joint development of the straddling hydrocarbon. The unit operator must submit the development plans to both parties and the exploitation agreement between Canada/France has been signed to proceed to commercial

[242]Comments received from governments on shared natural resources, DOCUMENT A/CN.4/607* and Add.1, sixty-first session of the International Law Commission available on https://legal.un.org/ilc/documentation/english/a_cn4_607.pdf Agreement between the Government of Canada and the Government of the French Republic relating to the Exploration and Exploitation of Transboundary Hydrocarbon Fields (signed in Paris, 17 May 2005) was signed following the 1992 Arbitral Tribunal delimiting the maritime boundary between Canada and France (Saint-Pierre-et-Miquelon). The possibility of petroleum fields straddling the Canadian-French boundary triggered the signing of an

agreement to provide a management regime for hydrocarbon exploration and exploitation offshore Newfoundland, Nova Scotia and Collectivité de Saint-Pierre-et-Miquelon. The Agreement between the Government of Canada and the Government of the French Republic relating to the Exploration and Exploitation of Transboundary Hydrocarbon Fields recognizes the need for a common approach to oil and gas management to ensure the conservation and management of hydrocarbon resources that straddle the maritime boundary, to apportion between the two countries the reserves found in transboundary fields and to promote safety and the protection of the environment.

[243] Article 3(2) of the Agreement between Canada and France

[244] Article 5-18 of the agreement between France and Canada

production of the straddling hydrocarbon field. This agreement stipulates the mandatory procedural obligation to share information when the two states cannot agree on the joint development of the straddling hydrocarbon.

e. USA and Mexico

The USA/Mexico agreement has no mandatory obligation for unitization. The agreement only encourages the two states to jointly develop a straddling reservoir through a unit agreement. Article 7 of the agreement contemplates that the licensees and executive agencies of the two states may endeavour to enter a joint venture. Under this agreement, if parties do not agree on unitization, the obligation is limited to the exchange of production data monthly. As a result, either state can develop a straddling field from its side subject to sharing production data. This replicates acceptance of the rule of capture. To date, no straddling hydrocarbon has been developed on the US/Mexico maritime boundary to enable us to explore further how the rule of capture can be applied in international law.

f. Australia and Timor-Leste

The Timor Sea treaty is a treaty between Australia and Timor-Leste for the unitization and joint development of oil and gas in the great sunrise fields.[245] The Joint Petroleum Development Area (JPDA) was established in 2002 following the signing of the Australia/Timor-Leste Treaty.[246] The

[245] In Clive Schofield, *Blurring the Lines? Maritime Joint Development and the Cooperative Management of Ocean Resources,* in FRONTIERISSUESINOCEANLA W: MARINERESOURCES, MARITIME BOUNDARIES, AND THE LA WOFTHESEA (2009) available on https://www.degruyter.com/document/doi/10.2202/1539-8323.1103/html

[246] In Clive Schofield, *Blurring the Lines? Maritime Joint Development and the Cooperative Management of Ocean Resources,* in FRONTIERISSUESINOCEANLA W: MARINERESOURCES,MARITIMEBOUNDARIES,ANDTHELA WOFTHESEA (2009) available on https://www.degruyter.com/document/doi/10.2202/1539-8323.1103/html, According to The East Timorese government together with the United Nations Transitional Authority for East Timor (UNTAET) made it clear that East Timor would not be bound by any of the agreements related to East Timor's territory entered into by Indonesia including the Timor Gap JDZ. In order to safeguard ongoing seabed resource developments in the Timor Sea, a new agreement, Timor Sea Treaty (TST) was signed between Australia and East Timor on the day that East Timor became independent. The TST established a Joint Petroleum Development Area (JPDA), which coincided with the central part of the old Australia-Indonesia joint zone (Zone A). Whereas in the past revenues from Zone A had been shared between Australia and Indonesia on an equal basis, under the TST revenues from seabed resources exploited within the JPDA are split 90:10 in East Timor's favour. Complications arose in relation to the Greater Sunrise

two states did not agree on a maritime boundary at the time of the signing of the treaty due to the rich oil and gas deposits in the region.[247] Australia's claim for cooperation was based on the natural prolongation of the continental shelf of the Timor Sea whereas Timor-Leste claimed an equidistance delimitation line.[248] The two states agreed to jointly explore and exploit oil and gas in the JPDA. According to the agreement, Timor-Leste and Australia were to share proceeds from the great sunrise at 90 per cent for Timor-Leste and 10 percent for Australia.[249] The Agreement incorporates the unitization of oil and gas straddling the JPDA.[250] The sovereignty of each state in the JPDA was not affected by the joint development.[251] The commission coordinates regulatory authorities of the parties in the administration of the JPDA.[252]

complex of fields. Unitization agreements between Australia and East Timor were signed, but East Timor opted to delay ratification.

[247] Agreement between the Government of Australia and the Government of the Democratic Republic of Timor-Leste relating to the Unitization of the Sunrise and Troubadour fields Department of Foreign Affairs and Trade, Canberra.

[248]In Peter A. Glover, *The Strength of the Timor-Leste Case and Section 51 of the Constitution,* 24 Australian Resources & ENERGY L.J. 307 (2005), according to Article 9 of the Timor-Leste Maritime Zones Act, the outer limit of the continental shelf of East Timor is the line every point of which is at a distance of two hundred nautical miles from the nearest point of the baseline, or the outer edge of the continental margin, where the continental margin extends beyond two hundred nautical miles from the baseline. Given the distance between Australia and Timor-Leste is approx. 130 nautical miles, the Timor-Leste position is that a seabed boundary should be based on a median line between the two countries. See also Damian Grenfell, *'Nation Building and the Politics of Oil in East Timor'* (2004) 22 ARENA Journal 45, 47, Timor Sea Office, Press January 2005 (2005) at 19 April 2005; and, 'East Timor wins equal share of Sunrise', Australian Financial Review (Sydney) 14 May 2005, 5.

[249] Ibid clause 4 of the agreement states that Australia and East Timor shall have title to all petroleum produced in the JPDA. Of the petroleum produced in the JPDA, ninety (90) per cent shall belong to East Timor and ten (10) per cent shall belong to Australia

[250] Clause 9 of the Timor-Leste agreement states that *"any reservoir of petroleum that extends across the boundary of the JPDA shall be treated as a single entity for management and development purposes. (b) Australia and East Timor shall work expeditiously and in good faith to reach agreement on the manner in which the deposit will be most effectively exploited and on the equitable sharing of the benefits arising from such exploitation"*

[251] Article 2 of the Timor-Leste Agreement

[252] Article 9 of the Timor-Leste Agreement

The Agreement further incorporated cooperation in protecting the marine environment and pollution arising in the JPDA. The JDA shows Australia and Timor-Leste's holistic approach to managing the shared oil and gas field. In 2018, Australia and Timor-Leste reached an agreement for the final maritime boundary in the Timor gap. Though not yet in force, the new Timor Sea Treaty will terminate the operation of the 2002 Timor Sea treaty.

3.1.2. Model agreements on Joint Development Zones

a. Bahrain-Saudi Arabia

The JDA between Bahrain and Saudi Arabia is a perfect example of a cooperative arrangement between states to exploit mineral resources on the continental shelf. Bahrain and Saudi Arabia's JDZ was the first JDA entered into under the Continental shelf convention.[253] It defined the diplomatic importance of cooperative management of resources of the continental shelf.[254] Bahrain and Saudi Arabia delimitation treaty created a joint development area where the two states could share revenue collected from oil activities. Saudi Arabia was granted the exclusive responsibility to develop the oil and gas resources in the area and share half of the revenue with Saudi Arabia. Bahrain's sovereignty over the area is limited to the continental shelf. Saudi Arabia retained its right over the EEZ.[255]

b. Kuwait-Saudi Arabia

The agreement between Kuwait and Saudi Arabia concerning the partition of the neutral area created a shared zone for the exploitation of hydrocarbons.[256] The two states unitized the oil deposit

[253] The 1958 convention on the Continental Shelf. According to Virginia Commentary, the Arab group agreed with the definition of the continental shelf as fronted by the African Group. To access the resources of the continental shelf, joint development arrangements in the Persian Sea were adopted by the Arab states

[254] Bahrain-Saudi Arabia boundary agreement 22 February 1958

[255] Ibid 37 Article 2

[256] Fereidun Fesharaki, *Joint Development of offshore Petroleum Resources: The Persian Gulf Experience,* in Mark J. Valencia *the South China Sea: Hydrocarbon Potential and Possibilities of Joint Developments,* Energy Vol. 6 No. 11, pp. 1325-1334, 1981.

in the neutral area by appointing one operator to develop the petroleum reservoir.[257] The two operators appointed by the two states entered joint ventures to develop the hydrocarbon reservoirs in the joint zone/neutral area.[258]

i. Malaysia and Vietnam

The Agreement concluded by Malaysia and Vietnam in 1992 established a defined area in the Gulf of Thailand for the exploration and exploitation of seabed petroleum deposits.[259] The JDZ was promoted by the oil discoveries made by Malaysian contractors within the overlapping maritime area. The Joint development arrangement will last for 40 years, subject to extensions. The Agreement offers a framework under which nominees of the two governments can enter into agreements for exploring and exploiting petroleum reserves in the JDZ once it has been delimited. The two states are to share costs and revenues equally. Each state's right in the JDZ is managed by their respective national oil companies, namely Petronas of Malaysia and PetroVietnam of Vietnam.[260] The Agreement has been used in the development of oil and gas discoveries in the gulf of Thailand.[261]

h. Nigeria and Sao-Tome Principe

[257] Ibid 39, Article 3 of the Supplementary Agreement to the Agreement between the Kingdom of Saudi Arabia and the State of Kuwait on the Partition of the Neutral Zone and to the Agreement between the Kingdom of Saudi Arabia and the State of Kuwait concerning the Submerged Area Adjacent to the Divided.

[258] Ibid 40, Article 4 provides that the Parties agree that the Khafji Joint Operations and the Wafrah Joint Operations shall have, without impediment or fees, the right to possess and make use of, but not own, in a reasonable manner such areas that they need to carry out their operations

[259] Agreement between the Government of the Kingdom of Thailand and the Government of the Socialist Republic of Viet Nam on the delimitation of the maritime boundary between the two countries in the Gulf of Thailand, 9 August 1997 (entered into force 28 February 1998).

[260]NH Thao, *Joint development in the Gulf of Thailand,* IBRU Boundary and Security Bulletin, 1999 - durham.ac.uk

[261]Clive Schofield, *Unlocking the Seabed Resources of the Gulf of Thailand*, Contemporary Southeast Asia, August 2007, Vol. 29, No. 2 (August 2007), pp. 286-308 available on https://www.jstor.org/stable/25798832

Nigeria and Sao Tomé and Príncipe concluded a treaty in 2001 establishing a joint zone between them.[262] The objective of the joint arrangement is to exploit and share the natural resources, especially the hydrocarbons and seabed resources of the JDZ.[263] The Nigeria-Sao Tome Principe treaty contains elaborate procedures in the JDZ. The agreement establishes a Joint Ministerial Council and a Joint Authority (renamed the Joint Development Authority).[264] In addition to managing activities relating to the exploration of natural resources, the Authority controls movements into and out of the JDZ, establishes safety zones and restricted zones and regulates marine scientific research and preservation of the marine environment. Parties are to undertake joint exploration and exploitation activities for hydrocarbons within the JDZ.[265] Revenues derived from the exploitation of the resources within the joint zone are to be shared based on 60 per cent to Nigeria and 40 per cent to Sao Tomé and Príncipe.

The joint agreement addresses the issues of maritime security issues within the JDZ. The agreement permits security policing JDZ upon which the parties can jointly conduct defence or police activities. The Authority may request action from relevant authorities of the parties concerning search and rescue in the JDZ, preventing pollution and deterring and suppressing terrorist threats to vessels and structures within the zone.

i. Nigeria and Cameroon

The joint development area between Nigeria and Cameroon is a clear example of cooperation promoting good neighbourly relationships. The disputes and uncertainties over the Bakassi

[262] Treaty between the Federal Republic of Nigeria and the Democratic Republic of Sao Tomé and Príncipe on the Joint Development of Petroleum and other Resources, in Respect of Areas of the Exclusive Economic Zone of the Two States.

[263] Economics, Politics and the Rule of Law in the Nigeria-Sao Tomé e Príncipe Joint Development Zone," Journal of International Affairs 59, 1 (Fall/Winter 2005) at pp. 81-96.

[264] Treaty between the Federal Republic of Nigeria and the Democratic Republic of Sao Tome and Principe on the Joint Development of Petroleum and other Resources, in respect of Areas of the Exclusive Economic Zone of the Two States 21 February 2001

[265] Ibid (30) article 3, revenue collected from the area is to be shared at 60% for Nigeria and 40% for Sao Tome Principe.

Peninsular arose in the aftermath of the ICJ judgment.[266] UNGA facilitated negotiations between Cameroon and Nigeria to enable the two states to reach an agreement for a peaceful handover of the Bakassi Peninsular.[267] The Cameroon-Nigeria mixed commission was established to implement the 2002 ICJ judgment. The CNMC recommended cross-border cooperation on hydrocarbon deposits straddling the maritime boundary. Subsequently, the two states agreed on joint exploration of any oil and gas deposits straddling their maritime borders.[268] CNMC spearheaded the peaceful transfer of sovereign authority over the Bakassi peninsular from Nigeria to Cameroon. Though no joint development agreement has been signed, the cross-border cooperation mechanisms have improved the diplomatic relationship between the two states bringing peace to both states. However, this cooperation shows that when diplomatic relationships between two neighbouring states are severed due to third-party settlement, joint developments can repair strained neighbourly relations.

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[266] In Eddy Lenusira Wifa, Mark Amakoromo, Ibiateli Johnson-Ogbo, *the role of a Joint Development Agreement (JDA) in resolving the conflicts and uncertainties over maritime boundary delimitation. A missed opportunity in the Bakassi case* in *The Bakassi Dispute and the International Court of Justice Cameroon,* Routledge, (2008) Cameroon filed a land and maritime delimitation case against Nigeria over occupation of the hydrocarbon rich Bakassi Peninsular. The Court rejected these arguments and ruled by a vote of 13 to 3 that the agreements between Nigeria and Cameroon were valid and subsisting, which meant that the oil- rich Bakassi region belonged to Cameroon. The Court observed that some treaties were for purposes of protection while others were created for acquiring territorial title, which the Nigeria- Cameroon treaties, notably the 1884 Treaty sought to give, and it did give the title of the Bakassi region to Cameroon. Therefore, the Court in its judgment of Thursday 10 October 2002 ruled in favour of Cameroon and declared Bakassi as a part of Cameroon. With the intervention of the then Secretary- General of the United Nations, Kofi Anan, including several bilateral meetings between the Presidents of both countries, Nigeria was able to hand over the Bakassi region to the Cameroonian Government by signing the Greentree Agreement on 12 June 2006. This was achieved under the watchful eyes of UN envoy Kieran Prendergast and representatives of the UK, France, Germany and the USA, who were present as Nigeria's Minister of Justice Bayo Ojo and his Cameroonian counterpart Maurice Kamto signed the official documents which transferred sovereignty of the Bakassi region to Cameroon.83 As will be seen in the subsequent segment, this simple act of signing did not automatically lead to an end of the conflict and uncertainties.

[267] Ibid 50

[268] Junaidu Bello Marshall, 'Joint Development of Offshore Oil and Gas in the Gulf of Guinea: A Case of Energy Security for Nigeria and Cameroon' (2014) 32 Journal of Law, Policy and Globalization 146

3.2. SECTION B: CHALLENGES AND BENEFITS OF JOINT DEVELOPMENT OF STRADDLING RESOURCES

Lack of political goodwill and competing interests from investors in the petroleum sector make it difficult for states to jointly exploit straddling resources. Neighbouring states derive benefits from joint developments by pooling their existing sovereign rights. Through joint development arrangements, coastal states may obtain optimum economic and environmental benefits.

3.2.1. Challenges of Joint Development of straddling hydrocarbon deposits.

Territorial and border disputes over resources still define interstate relationships between coastal states. These disagreements arise from historical and cultural claims over the disputed zones. As discoursed above, the discovery of existing natural resources influences disagreements that may arise from natural resources. Each state strives to preserve its foreign policy by maintaining its economic and political interests.[269] Cooperation in shared hydrocarbon resources starts with political pronouncements by the states indicating their intention. Political aspects describe the type of arrangement in the exploitation of natural resources. Through this, intentions of coastal states are clearly stipulated before finalising the agreement.[270]

As discussed above, states need to acknowledge the existing maritime boundary, determine the presence of a transboundary reservoir and agree on the joint development area. With a maritime boundary already determined, their interests are limited to specific shared resources. JDA is the second option in straddling resources after delimiting a maritime boundary because it permits states to exploit shared resources without giving up their maritime sovereignty. JDAs provide legal

[269] Myron H. Nordquist, John Norton Moore, John Norton Moore, and Judy Ellis, *Maritime Border Diplomacy* University of Virginia. Center for Oceans Law and Policy. Conference (35th : 2011 : Bali, Indonesia)

[270] Ibid. In the 2008 Japan-China Agreement on Cooperation for the Development of East China Sea Resources over Shirakaba field, China and Japan acknowledged that the arrangement is not a joint development per se but Japan's investment to the oil and gas development activities of China.

and political certainty and reduce investment risks and damages for petroleum operators.[271] JDA modalities comprise a single-state model where one state manages the straddling deposit on behalf of both states.[272] Unitization where states unitize the shared deposit by nominating one operator. A joint authority/commission[273] where both states establish a commission to manage operations in the shared deposit.[274] Economic, political and environmental factors have to be considered before entering into JDAs.

Deterioration in bilateral relations is the only consistent cause associated with the Failure of joint development agreements. Ongoing maritime boundary disputes precipitate this deterioration of diplomatic relationships. Before proceeding with negotiations, previous maritime disputes must be considered. States must acknowledge the previous conflicts and apportion risks and liabilities arising from proposed cooperation arrangement. Friendly bilateral relation is a prerequisite for participating neighbouring states to be conditioned towards joint development arrangements. Participating states should have good and friendly neighbourly relationship to be predisposed toward joint development. They create practical and positive attitude towards developing transboundary hydrocarbons and encourage the conclusion and implementation of JDAs.[275]

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[271] Cecilia A Low, *Marine Environmental Protection in Joint Development Agreements*, Journal of Enenrgy and Natural Law, Vol. 20, 2012, 45-74; Mohammed Naseem, Saman Naseem, *International Energy Law, Wolters*, Kluwer, 2003; Paul Michael Blyschak, *Offshore oil and gas projects amid maritime border disputes: applicable law,* The Journal of World Energy Law & Business, Volume 6, Issue 3, September 2013, 210-233 available on https://doi.org/10.1093/jwelb/jwt008

[272]Ibid 86. See also David M. Ong, *Joint Development of Common Offshore oil and Gas Deposits: "Mere" State Practice or Customary International Law?* American Journal of International Law, Volume 93, Issue 4, October 1999, pp. 771 - 804, Chukwuemeka Mike Okori, *Have the Modern approaches to Unit Development of Straddling Petroleum Resources Extinguished the Applicability of the Primordial Law of Capture?*

[273]Ibid 86. See also David M. Ong, *Joint Development of Common Offshore oil and Gas Deposits: "Mere" State Practice or Customary International Law?* American Journal of International Law, Volume 93, Issue 4, October 1999, pp. 771 - 804, Chukwuemeka Mike Okori, *Have the Modern approaches to Unit Development of Straddling Petroleum Resources Extinguished the Applicability of the Primordial Law of Capture?*

[274] Nigeria-Sao-Tome Principe, Nigeria-Cameroon Agreement on implementation of the ICJ Judgment

[275] In the Kuwait-Saudi Arabia Agreement, the main justification was the desire to quickly develop the oil fields in the joint development area. The two states ignored their political differences and developed the oil fields to production stage.

JDAs represent effective mechanisms through which states can benefit from shared hydrocarbon resources without jeopardizing diplomatic relationships and military tensions.[276] Tensions over access to the straddling hydrocarbons often lead to strained diplomatic relationships.[277] Due to the transient nature of straddling hydrocarbons, some states disagree on how to explore them.[278] Few already signed bilateral agreements for the exploration and exploitation of hydrocarbons have proceeded to the implementation and commercialization phase.[279] Failure to implement these bilateral agreements is beyond the legal framework and international law. The most significant factor is the political will to cooperate in managing shared resources. Other factors such as the intervention of third parties, deterioration of diplomatic relations, the emergence of domestic opposition and economic incentives affect the implementation of JDAs.[280]

According to William Stormont and Ian Townsend-Gault, political will is "the single most important ingredient in the successful conclusion and continuation" of any joint development arrangement.[281] National interests over natural resources existing in already delimitated boundaries impede the negotiation and conclusion of these agreements. Criticism from opposite parties

[276] Junaidu Bello Marshall, *Joint Development of Offshore Oil and Gas in the Gulf of Guinea: A Case of Energy Security for Nigeria and Cameroon*, Journal of Law, Policy and Globalization, Vol.32, 2014. The concept of JDA has become increasingly accepted as a constructive means in settling difficult disputes involving International maritime boundaries claims. It is an appropriately practical and legally viable measure for the development, exploration for, or exploitation of, natural resources either as an alternative to boundary delimitation or in some instances in addition to maritime boundary.

[277] The Cameroon-Nigeria mixed commission set up to facilitate implementation of the 10 October 2002 judgment of the International Court of Justice (ICJ) on the Cameroon-Nigeria boundary dispute facilitated withdrawal of military troops from the L. Chad and promoted cross boarder peace building mechanisms.

[278] G.H. Blake and R.E. Swarbrick, *'Hydrocarbons and International Boundaries: A Global Overview'* in G. Blake et al. (Eds). *Boundaries and Energy: Problems and Prospect* (Kluwer Law International, 1998) at 3.

[279] SONG XUE, *Why Joint Development Agreements Fail: Implications for the South China Sea Dispute*, Contemporary Southeast Asia Vol. 41, No. 3 (2019), pp. 418–446

[280] Ibid 93

[281] Ian Townsend-Gault, "*Joint Development of Offshore Mineral Resources Progress and Prospects for the Future"*, Natural Resources Forum 12, no. 3 (August 1988): 275; John Abrahamson, *Joint Development of Offshore Oil and Gas Resources in the Arctic Ocean Region and the United Nations Convention on the Law of the Sea", Brill Research Perspectives in the Law of the Sea 1, no. 4 (August 2018)*

accuses the government of sacrificing national interests. Since operators follow the coastal states' national laws, great emphasis must be paid to the national laws of both states. Requirements for public participation, Environmental Impact Assessment (EIA), fiscal policy and taxation law impact the licencing of operators. Further, public acceptance prevents any legal action that could lead to a deadlock in negotiation and implementation.

Though the continental shelf regime gives unilateral sovereign rights to explore and exploit resources of the continental shelf, the EEZ provides a balance of rights and duties.[282] The EEZ provides for ecosystem management of marine resources by balancing the responsibilities and obligations of states. The ecosystem approach involves balancing hydrocarbon exploration with marine environment conservation. The increasing demand and expansion of offshore hydrocarbon development give rise to conservation challenges. Oil and gas extraction and transit are accompanied by deteriorating environmental situations. States are encouraged to cooperate in dealing with the environmental risks and impacts of offshore hydrocarbons on marine ecosystems.[283] Environmental security in offshore hydrocarbons should be undertaken by investors and host states licensing these activities.[284] In addition, the competing demand for marine space and resources therein gives rise to competing interests between states, especially if

[282] In Ian Townsend-Gau, *William G. Stormont Offshore Petroleum Joint Development Arrangements: Functional Instrument? Compromise? Obligation?* London. Graham & Trotman, (1995), domestic decisions on fishing, navigation, petroleum and environmental protection not only impact the neighbouring states but distant states.

[283] In Salit Kark, Eran Brokovich,Tessa Mazor, Noam Levin, *Emerging conservation challenges and prospects in an era of offshore hydrocarbon exploration and exploitation, Conservation Biology review, (2015),* environmental impacts of routine offshore hydrocarbon operations occur at the exploration, development, production, transport, or well-abandonment phases. Oil spills and natural gas leaks can occur at various stages of hydrocarbon operations. Some Osper convention member states have put up measures to conserve the environment. Unfortunately, regulations, technology and practices on oil spill cleanup do not address the risks associated with deep water drilling. With the increase in offshore exploration, interstate and sector based research collaboration is encouraged available on Emerging conservation challenges and prospects in an era of offshore hydrocarbon exploration and exploitation (wiley.com)

[284] Editors-in-Chief: Damia` Barcelo´ l Andrey G. Kostianoy, *Oil and Gas Pipelines in the Black-Caspian Seas Region.* The Handbook of Environmental Chemistry 51. Springer, 2016

the hydrocarbons straddle.[285] National, sub-regional, regional and global cooperation development environmental implications must be considered when developing Joint Development Arrangements (JDAs). JDAs provide a holistic approach to marine resource management, exploration and exploitation and security, which is necessary for exploration activities.

When an established maritime boundary exists, states enter JDAs and unitization agreements for economic benefits derived from the shared hydrocarbon. Here, states' interest when negotiating is based purely on the economic benefit of shared hydrocarbon resources. The false pretext for advancing maritime boundary claims no longer exists.[286] Joint exploration and appraisal enable states to ascertain the commercial viability of hydrocarbons in the shared deposit. This guides states on the most viable cooperation arrangement and revenue sharing arrangement.[287] Through this, coastal states can ascertain the share costs and benefits of exploiting the straddling deposits without sacrificing the sovereign rights over the shared resources.[288] A state's critical need for hydrocarbons is motivated by the desire to economically benefit from the resources. Somalia is motivated by the fact that due to the long political instability and its desire to economically develop, it has priority over the hydrocarbon resources.[289] Therefore, economic motivation is an integral factor in the development of straddling hydrocarbon resources.

As fuel prices rise, upcoming developing countries aspire to secure their potential energy sources. The need to secure and exploit energy resources for future energy security increases the need for

[285] Myron H. Nordquist, et al. *The Regulation of Continental Shelf Development: Rethinking International Standards.* Brill | Nijhoff, 2013.

[286] Masahiro Miyoshi, *the Joint Development of offshore Oil and Gas in relation to Maritime Boundary Delimitation* Maritime Briefing Vol. 2, No. 5 (1999)

[287] In *Kuwait-Saudi Arabia Agreement of 1965,* two companies signed a Joint operating agreement to explore and develop oil and gas in the neutral area. The two states equally shared the revenues collected from the oil and gas. In *Iran-Sharjah Memorandum of understanding of 1971,* revenue sharing arrangement in respect of the territorial sea appointed a single oil company to operate the MoU.

[288] Robert Beckman and Leonardo Bernard, *Framework for the Joint Development of Hydrocarbon Resources* Asian Yearbook of International Law, Volume 22 (2016).

[289] In Somalia's memorial to the ICJ in *Kenya v Somalia*, it states that Kenya is economically advantaged with good soils, natural resources and recently discovered onshore oil and gas. It pleaded that due to the economic advantage of Kenya, Somalia should be granted rights over the petroleum blocks.

joint development projects. Through joint ventures, rich hydrocarbon and energy resources that disagreement by states may jeopardize have been developed. Oil and gas development projects raise severe environmental issues ranging from oil and gas spills, marine environment protection and climate change and green gas emissions.

The significance of the resources to the countries concerned and the degree of benefit that could be gained from the resources encourage states to undertake joint development arrangements. Assessment of the size of the hydrocarbon deposits determines the prospects of commercial viability, which is conducive to concluding and implementing JDAs. In some instances, accurate assessment of the deposits can make states reluctant to agree on the formula of sharing proceeds from the deposits.[290] Kenya and Somalia rely on foreign private investors who bring in foreign capital, foreign technical expertise and equipment for the development of offshore hydrocarbons. Due to the capital-intensive investment required for the development of offshore hydrocarbons, foreign investors are reluctant to invest in disputed hydrocarbon deposits even when maritime boundaries exist. The two states can attract operators through JDAs. Since JDAs create certainty over the shared deposits, investor confidence is restored.

3.2.2. Benefits of joint development of transboundary hydrocarbon reservoirs

a. Operational benefits

Unitization of transboundary reservoirs eliminates wastage from competitive drilling. Efficiency derived from two operators working together to develop a straddling field promotes the working interest of the appointed licensee, who maximizes their production and reduces wastage.[291] Procedural matters that may impede the joint development of straddling hydrocarbons have been addressed in UA. Unitisation and JDAs minimize conflict over the exploitation of a straddling hydrocarbon deposit. As discussed above, sovereignty over the continental shelf grants states the power to derive economic benefits from the resources derived therein.[292]

[290] Mark J. Valencia, *Taming Troubled Waters: Joint Development of Oil and Mineral Resources in Overlapping Claim Areas*, San Diego Law Review Vol. 23: 661, 1986, pg. 675.

[291] Ibid note 50, the unitization agreement between the UK and Norway was facilitated by the economic benefits that would be derived from it.

[292] Ibid

So, where a hydrocarbon straddling the maritime boundary can be exploited from either side, a conflict between the two states may arise because the hydrocarbon straddles the boundary line. Through unitization, conflict over resources can be minimized, strengthening the broken-down diplomatic relationships between two states. Applicability of the national laws of both states of the unit reservoirs upholds the sovereignty of the states over the natural resources without one state feeling like it is losing out on the straddling hydrocarbon.

Institutional frameworks have been put in place to reduce conflict over straddling resources. Institutional frameworks facilitate the smooth operation of the unitized hydrocarbon or joint development area to ensure continuous consultation and exchange of information between the two neighbouring state parties. Commissions or their equivalents ensure that the unitized fields or JDZs are operated smoothly and implemented effectively

Commissions or their equivalents created in JDAs ensure that the unitized fields or JDZs are operated smoothly and implemented effectively.[293] The commissions facilitate cooperation between the licensees of the parties to the joint development agreements.[294] States agree on the geographical and geological composition of the transboundary field, the total amount of the reserve and the apportionment of the reserve between the parties through these cooperation mechanisms.[295]

Dispute settlement procedures included in the JDAs and unitization agreements above are crucial in conflict resolution. Most JDAs and UAs discussed above have elaborate dispute settlement procedures needed to address the conflict between the operators or licensees. The ad hoc tribunals, mediation, negotiation and consultation mechanisms established in the joint development area facilitate smooth operations and reduce time wasted on third-party litigation.[296]

b. Security of platforms

[293] Ibid 15 states that Article 1(1)(5)v of the Norway/Russia agreement envisions establishment of commissions, the UK/Norway agreement establishes the framework forum, Venezuela/Trinidad establishes a Ministerial Commission, Nigeria/Sao-Tome Principe envisions a joint authority.

[294] ibid

[295] The UK/Norway agreement

[296] Ibid

Joint development of straddling deposits cautions operators against losses that may be incurred due to uncertainty and insecurity. Offshore exploration and exploitation activities are highly costly ventures requiring vast investments. Licensees require extensive and long-term capital investments in upstream development to collect data and information on offshore resource potential before initiating production of the fields. Most developing states do not have the technical know-how and sufficient financial capacity to invest in downstream activities of offshore hydrocarbons. These states develop offshore hydrocarbons by engaging private entities, some of which create joint ventures to develop straddling hydrocarbons as a unit deposit.

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c. Environmental benefits

The upstream and downstream offshore exploitation activities can cause accidents leading to pollution in adjacent areas. Diverse environmental impacts are associated with offshore oil and gas exploration and production activities, notably pollution from installations and devices.[298] Parties are under an obligation to protect the marine environment from pollution in the JDZ.[299] Through cooperation, measures to prevent accidents and deal with emergencies, ensure the safety of operations at sea, and regulate the design, construction, equipment, and operation of installations

[297] ibid

[298] Wartini Sr., 'The Role of the Coastal States to the Protection of Marine Environment in Joint Development Agreement' (2017) 14 Indonesian J Int'l L 433

[299] David M. Ong, "Joint Development of Common Offshore Oil and Gas Deposits: "Mere" State Practice or Customary International Law? Vol. 99, Am. J. Int'l L. (October 1999), at 777

and platforms are put in place. In compliance with UNCLOS, rules and standards.[300] Practices and procedures for protecting the environment in the JDZ are developed and implemented jointly. Safety procedures to reduce pollution are properly maintained due to frequent inspections from both states as opposed to competitive drilling. Coastal states have sovereign authority to issue guidelines and regulations for the protection of the marine environment in the JDZ per international instruments[301]

Article 194 obligates all states to protect and preserve the marine environment. In performing this obligation, states take measures jointly or individually to ensure activities within their jurisdiction don't cause pollution to the jurisdiction of another state. States should take measures to ensure that pollution from installations and devices used in exploration within their jurisdiction does not cause harm to another state. Due to the proximity to the boundary line, there is a high degree of danger of transboundary pollution from the drilling of a transboundary reservoir. Further, some actions requiring the prevention of pollution may make a state interfere with the activities of another state, especially if installations are erected close to the boundary line.[302] Collaboration between states increases surveillance measures to prevent pollution from oil and gas installations. Collaboration can be undertaken directly between states through JDAs or through regional bodies.

Article 197 of UNCLOS makes regional and global cooperation mandatory. States are required to cooperate with global or regional international bodies to formulate measures for protecting the marine environment. Regional bodies must consider the characteristics of the marine environment when developing measures. All measures should be undertaken to protect the fragile ecosystem of the regional coasts. Regional bodies have been established to implement the requirements of UNCLOS to facilitate the protection of the marine environment. The Nairobi Convention[303]

[300] Article 197 of UNCLOS encourages states to cooperate on a regional basis to develop rules, standards, practices and procedures necessary for protection of the marine environment.

[301] The Convention for the Prevention of Pollution from ships 1973/78 (MARPOL), The Convention on Biological Biodiversity, The Nairobi Convention,

[302] Article 194(4) of UNCLOS states that *"In taking measures to prevent, reduce or control pollution of the marine environment, States shall refrain from unjustifiable interference with activities carried out by other States in the exercise of their rights and in pursuance of their duties in conformity with this Convention*"

[303] Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region

stipulates mechanisms through which member states can cooperate in the protection of the marine ecosystem. States can cooperate among themselves or through regional bodies to come up with measures aimed at preventing the pollution of the environment. Bilateral agreements in the form of JDAs and UAs foster and strengthen cooperation among states which is necessary for the protection of the marine environment.

Conclusion

From state practice above, states have cooperated through AUs or JDAs. Through JDAs, states agree on the formula of sharing the proceeds of petroleum extracted depending on the size of hydrocarbons located on each side of the maritime boundary. This formula may be used in both unit areas and JDZ. In addition to the economic benefit of JDAs, states have benefited from the environmental protection undertaken in JDZ. Joint inspections undertaken by either state in JDZs and unit areas have facilitated compliance with safety procedures. Through this, measures aimed at protecting the marine environment are enforced.

4. CHAPTER 4: LESSONS FOR KENYA AND SOMALIA

Somalia is located on the East Coast of Africa between latitudes 12°00' N and 1°40' S, and longitudes 41°00' and 51°25' E. Kenya is located on the East Coast of Africa to the southwest of Somalia between latitudes 5º 30' N and 4º 41' S, and longitudes 33º 59' E and 41º55' E. Kenya and Somalia share a maritime boundary in the Indian Ocean. Somalia's maritime boundary stretches from the Gulf of Aden at (12°29'N - 43°19'E) along the coastline of Somalia-Djibouti, the Arabian Sea at (11°50'N - 51°17'E) and extents eastward along the coast of East Africa to the coast of Kenya at the West Indian Ocean (WIO). Kenya's maritime boundary is shared with Tanzania on the south and Somalia on the north. The two neighbouring states have enacted legislation to implement UNCLOS and proclaimed 200NM EEZ and continental shelf. In addition, both states have made submissions to CLCS for extension of the continental shelf beyond 200 nautical miles.

Currently, offshore oil and gas exploration is being undertaken in Kenya's Maritime areas in the Lamu basin.[304] Hydrocarbons existing across and close the maritime boundary have been at the centre of the maritime dispute[305] and further disagreements on maritime jurisdiction.

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[304] Maritime Zones Act, Cap 371, Maritime Delimitation in the Indian Ocean (Somalia/Kenya), List of geographical coordinate available on https://www.un.org/depts/los/LEGISLATIONANDTREATIES/STATEFILES/KEN.htm Accessed on 12.12.2022 at 10.03am; See also https://nationaloil.co.ke/upstream/ accessed on 19.8.2022 at 10.00am Oil and gas exploration in Kenya started in the 1950s within the Lamu basin. British Petroleum (BP) and Shell began the first hydrocarbon exploration in 1954 in the Lamu embayment resulting in the drilling of 10 wells between 1960-1971. Though most of the wells showered indications of oil and gas, none was fully completed to production. Two wells had hydrocarbon shows making Kenya subdivide the Lamu onshore and offshore basin into ten exploration blocks following massive gas discoveries in Mozambique in 2003. Subsequently, the Gazettement of oil blocks in 2003 made Woodside Petroleum acquire seven offshore blocks. So far, additional seismic studies have been undertaken in the region, and additional blocks have been created. Kenya made its first commercially viable oil and gas discovery in the onshore tertiary rift in 2012. In 2013, Kenya signed PSA granting Eni permission to further explore the offshore hydrocarbons in Kenya's maritime waters. The maritime dispute before the ICJ paused further seismic drilling close to the maritime boundary.

[305] Memorial filed in the *Kenya v Somalia Maritime case,* Somalia explained about the hydrocarbon potential in the disputed area; In Anna Khalfaoui, Constantinos Yiallourides, *Maritime Disputes and Disputed Seabed Resources in the African Continent* Routledge Handbook of Energy Law (Routledge 2020), oil blocks awarded by Kenya to foreign

The legal and technical challenges existing between the two states are the transboundary hydrocarbons existing on the maritime boundary of the two states. Kenya is in the process of undertaking exploration activities on petroleum blocks straddling the maritime boundary to ascertain commercial viability.

4.1.SECTION A: OVERVIEW OF THE LEGAL FRAMEWORK ON TRANSBOUNDARY IN KENYA AND SOMALIA

Due to the colossal capital required in the exploration and exploitation hydrocarbons, certainty of the law applicable to transboundary reservoirs is paramount. National and international legal framework should be clear to enable contractors develop transboundary reservoirs without fear. The legal framework in Kenya and Somalia must support cooperation in the development of transboundary reservoir. To enable this, there is need to understand each state's position on unitisation and joint development of straddling reservoirs. When the national law supports unitisation, it's easier for even states that have strained neighbourly relationships to compromise and cooperate when hydrocarbons are discovered to straddle beyond the contract area within and beyond their jurisdiction.[306] This section will analyse the national legal framework on unitisation of offshore reservoirs in Kenya and Somalia.

oil companies were at the heart of the maritime dispute between Somalia and Kenya. The Somalian Parliament rejected the Memorandum of Understanding (MoU) between Kenya and Somalia which was aimed at delimiting the maritime boundary through negotiation; in 2012, Kenya awarded exploration licenses for eight offshore blocks to foreign oil companies in the Indian Ocean, including Italy-based Eni, France-based Total and Anadarko Petroleum. Exploration in the then disputed maritime was stopped. According to Kelly Gilblom, 'Kenya, Somalia Border Row Threatens Oil Exploration' (Reuters, 20 April 2012 available on https://www.reuters.com/article/us-kenya-exploration-idUSBRE83J0M120120420), Abdullahi Haji, the then Somalia's minister of foreign affairs, proclaimed that "the issue between Somalia and Kenya is

[306] A concession is a right granted by the State to an EC to search for, win, explore, extract, and mine extractive resources from a defined area of land over a stipulated time period, and if petroleum or mineral was discovered, to produce, market and transport the resource.

4.1.1. National Legislation on unitisation of transboundary petroleum reservoirs

4.1.1.1. Kenya

Upstream oil and gas sector in Kenya is governed by the Constitution of Kenya, 2010[307] the Petroleum Act, no. 2 of 2019[308] and the ninth schedule of the Income Tax Act.[309] The Constitution vests all minerals to the national government and classifies hydrocarbon minerals as public land. The Constitution mandates the state to utilise hydrocarbon minerals for the benefit of the people of Kenya. Article 69(1) (a) of the constitution bestows upon the state the duty to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources.[310] The state retains the title to the resources and has the authority to grant the contractor the right to explore hydrocarbons and, if discovered, to produce, market and transport petroleum products.

[307] The Constitution of Kenya 2010, Kenya Law Reports available on http://www.kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=Const2010 accessed on 12.12.2022 at 11.23am

[308] The Petroleum Act is an Act of Parliament to provide a framework for the contracting, exploration, development and production of petroleum; cessation of upstream petroleum operations; to give effect to relevant articles of the Constitution in so far as they apply to upstream petroleum operations, regulation of midstream and downstream petroleum operations; and for connected purposes available on http://kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=No.%202%20of%202019 accessed on 12.12.2022 at 10.05am.

[309] The production sharing agreement for the ongoing offshore oil and gas exploration was signed under the repealed Petroleum (Exploration and Production) Act and regulations therein.

[310] Article 69(1)(a) of the constitution of Kenya states that the State shall ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; Article 69(2) states that Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

The Petroleum Act no. 2 of 2019 regulates upstream onshore and offshore oil and gas activities within Kenya's jurisdiction.[311] The Petroleum Act stipulates mandatory terms in concessions[312] between the state and contractors. Contractors are procured through a competitive bidding process allowing the national authorities to analyse and select bids aligned with their pre-qualification criteria and objectives. Upon award of the bid, the state grants a concession to a contractor to explore, develop, sell, and export oil and gas in the specified contract area. Concessions are bilaterally negotiated between contractors and the state awarding.[313] The contractor signs a PSA granting them authorisation over the contract area. Upon execution of the PSA, the contractor attains exclusive right over the contract area to explore, develop, transport, and sell the oil and gas. The contractor retains the interest in the oil and gas and must pay a royalty for the extracted Petroleum.

The contractor is required to adhere to environmental, health and safety guidelines and procedures when exploring and developing the hydrocarbon reservoirs. Adherence to the environmental, health and safety guidelines is a mandatory requirement under the PSA. In straddling reservoirs, the risk of competitive drilling of one reservoir by two or more contractors leading to wastage and unsustainable exploitation is against the spirit of the Constitution of Kenya. There is mandatory unitisation of reservoirs straddling beyond the contract area.

The Petroleum Act[314] stipulates measures aimed in preventing wasteful and unsustainable competitive drilling of straddling reservoirs. The inclusion of mandatory unitisation is a measure aimed at ensuring sustainable utilization of hydrocarbon resources. It makes it mandatory for contractors to unitise reservoirs straddling beyond their contract area to another contract area. Unitisation is an agreement between contractors, who hold separate petroleum agreements on blocks that are adjacent or contiguous to each other for purposes of joint development or

[311] Ibid 287.

[312] A concession is a right granted by the State to an EC to search for, win, explore, extract, and mine extractive resources from a defined area of land over a stipulated time, and if petroleum or mineral was discovered, to produce, market and transport the resource.

[313] Ibid 287 section 2

[314] Ibid 286

production of petroleum from a field straddling two or more different contract areas.[315] The mandatory unitisation requirement is an express prohibition of competitive drilling of a straddling reservoir by two or more contractors. Where a petroleum deposit in a contract area extends beyond the said contract area, the authority may request the reservoir to be developed through a unitisation agreement.[316] If a contractor fails to enter in a unitisation agreement, the production sharing agreement signed between the contractor and the state shall lapse and the contract area will be granted to another contractor.

Upon confirmation of the commercial viability of the oil and gas, contractor is required to inform the cabinet secretary for Petroleum on unitisation if a reservoir extends beyond the contract area. The contractor is then required to prepare a production and development assessment report subject to a unitisation agreement or joint upstream petroleum activities and submits it to the cabinet secretary for approval.[317] The cabinet secretary will approve the unitisation agreement and grant the development and production permit over the unit deposit. Through a joint venture between the contractors, the contract areas are then developed as one contract area.

UNCLOS permits states to exploit natural resources in the continental shelf subject to protection of the marine environment.[318] The contractors have an obligation to comply with environmental, health and safety laws and procedures enacted by the sponsoring states. A contractor ought to carry out upstream operations in accordance with the environment, health, safety, maritime laws and petroleum best practices.[319] In addition, a contractor must ensure that the management of production, transportation, storage, treatment and disposal of waste arising out of upstream petroleum operations is carried out in accordance with all the applicable environmental, health,

[315] Ibid 286

[316] Ibid 287 Section 30(1)

[317]Ibid 287 Section 30(2); According to Section 31 of the Petroleum Act, the cabinet secretary for petroleum approves the field development plan within thirty days and the cabinet ratifies the PSA and field development plan within sixty days.

[318] Franckx, E. (1998). Regional Marine Environment Protection Regimes in the Context of UNCLOS, The International Journal of Marine and Coastal Law, 13(3), 307-324 https://doi.org/10.1163/157180898X00102

[319]Ibid 287 Section 59 of the Petroleum Act.

safety and maritime laws and best petroleum industry practices.[320] UNCLOS requires states to individually or jointly undertake measures to prevent transboundary pollution from activities undertaken in their continental shelf. Strict enforcement of environmental protection laws is in line with the general obligation in article 192 of UNCLOS requiring states to protect the marine environment. In addition, states require contractors to adhere to regional environmental protection and preservation rules formulated pursuant to Article 197 of UNCLOS.[321] States can enforce regional rules and standards on protection of the marine environment to prevent possible transboundary pollution and share information on the risks of not cooperating in developing a transboundary hydrocarbon reservoir.

The existing national legal framework of the two states promotes unitisation and joint development of straddling hydrocarbons with the national jurisdiction. Analysis of Kenya's petroleum Act and constitution affirms the principles of international law on transboundary resources and recognises the requirement for compliance with the maritime laws. The principles of international law stipulated in UNCLOS forms part of national law in Kenya and are legally binding on all contractors. Though the petroleum law is silent on transboundary hydrocarbon reservoirs, existing international law on the general obligation to cooperate in transboundary reservoirs is binding.

Further, the mandatory requirements on contractors to prevent transboundary pollution from upstream activities follow article 194 of UNCLOS and the Nairobi Convention. Section 58 of the Petroleum Act promotes the spirit of cooperate in the development of hydrocarbon deposits straddling the maritime boundary. In addition, treaties or conventions ratified by Kenya form part of the law of Kenya and the treatment extents to general rules of international law. By virtue of this, the obligation to cooperate in good faith, a principle of international legally binds Kenya.[322] Therefore, it can be argued that Kenyan Law encourages cooperation between states in transboundary hydrocarbon in compliance with UNCLOS and general principles of international law.

[320] Ibid 5 section 60(1)

[321] Nairobi Convention

[322] Ibid 6 Article 2(5) and 2(6)

4.1.1.2. Somalia

Upstream oil and gas sector[323] in Somalia is governed by the Constitution of the Federal Republic of Somalia, the Petroleum Law, and the PSA. The Somali Petroleum Act regulates onshore and offshore petroleum activities namely exploration, production, transportation, and sale. Somali law on unitisation of straddling reservoir is stipulated in the model PSA and the Petroleum Law. Under the Petroleum law, when a reservoir is discovered to lie partly within the contract area and partly in another contract area, the Somali Petroleum Authority (SPA) will require the contractors to enter a unitization contract with each other to ensure optimum production of the reservoir. If no unitisation agreement is reached within 18 months, the SPA shall unilaterally decide on the unitisation agreement.

According to the PSA, where a petroleum accumulation in the Contract Area extends beyond the boundaries of the Contract Area into another contract area or a license area, the SPA shall write to the contractor(s) requesting that they enter into a unitisation agreement.[324] The contractors are required to prepare a unitisation agreement and submit it to the SPA for approval. The SPA has the discretion to approve unitisation based on the evidence submitted. From these provisions, it's clear that the national legislation of Somalia permits mandatory unitisation within its jurisdiction.

[323] According to Somalia Petroleum Authority, the legal framework for the exploration and development of oil and gas was developed after the creation of the Federal Republic of Somalia in 2012. In 2019, Shell and Exxon resumed petroleum exploration in Somalia by making a legacy payment. The production period is 25 years after discovering commercially viable hydrocarbons, with a possible extension of 10 years. The force majeure was lifted when Somalia signed a PSA with coastline explorations. Subsequently, with a PSA in place, Coastline explorations are in the process of commencing offshore explorations in its maritime waters available on https://hbs.gov.so/exploration-production/history/ accessed on 19.8.2022 at 6.45pm.

[324] Article 41.1 of the PSA states that where a Petroleum Accumulation in the Contract Area extends beyond the boundaries of the Contract Area into another contract area or a license area, the SPA may, in order to ensure efficient and secure petroleum operations, require the relevant petroleum operations to be developed and produced in a coordinated manner in order to ensure optimum petroleum recovery and optimum use of the relevant petroleum infrastructure, may on written notice to the Contractor and other contractor(s) request that they enter into a unitisation agreement.

The agreement should define the amount of petroleum in the contract area covered by the unitisation.[325]

The Petroleum Law expressly requires a contractor to inform the state when a transboundary reservoir is discovered. Regarding transboundary oil and gas reservoirs, when a straddling receiver is discovered, the contractor is required to notify the authority about a petroleum accumulation that straddles the international boundary of another sovereign states.[326] Acknowledgement of a transboundary reservoir in article 41.8 of the PSA confirms that Somalia respects maritime boundaries and is willing to undertake necessary measures to prevent competitive drilling of a transboundary reservoir. This provision is progressive as it shows that Somalia is open to transnational unitisation agreements.

4.1.1.3. Regional framework on transboundary unitisation

Oil and gas development projects raise severe environmental issues ranging from oil and gas spills, protection of the marine environment, climate change and emission of green gas. Environmental challenges like pollution affect the entire region because of the risks involved in hydrocarbon drilling especially if the magnitude of pollution is wide. In transboundary reservoirs, the risks of environmental pollution from unregulated competitive drilling are high. Due to the immense risks of transboundary pollution, neighbouring states are encouraged to cooperate when a transboundary reservoir is discovered. As a precautionary approach, states cooperate either directly or through regional bodies to prevent risks of pollution from seabed activities.

Article 192 of UNCLOS envisioned the duty of states to undertake precautions to prevent pollution and protect the marine environment. The precautionary principle mainly applied in national law guides environmental decisions. ITLOS in *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan),* Provisional Measures did not indicate whether the precautionary principle is a customary international law. Some scholars believe that some elements of the precautionary

[325] Article 81 of the PSA available on https://hbs.gov.so/wp-content/uploads/2022/03/Somalia-PSA-Module.pdf accessed on 9.12.2022 at 6.47pm

[326] 41.8 of the PSA states that the Contractor shall forthwith notify the SPA where the Contractor discovers that a Petroleum Accumulation straddles an international boundary of the Federal Republic of Somalia and an international boundary of another sovereign state.

principle have developed into customary international law though still elusive.[327] In addition, international instruments, mainly the UNFCCC, UNCED, CBD, and Bamako convention, define the precautionary principle hence setting the ground for states to undertake precautionary steps towards protecting the marine environment at the national, sub-regional, regional and global levels. The intent of some principles of customary international law, especially the duty to notify other states and share information regarding activities that are likely to harm the environment, is self-executing and can be enforced in national law.[328]

Regional framework on sustainable utilisation of offshore hydrocarbons promotes the spirit of UNCLOS. Article 197 calls upon member states to cooperate at a regional and global level in formulating international rules, guidelines, and standards of preserving the marine environment in compliance with UNCLOS. Through global organisations, members notify each other on eminent danger of pollution to the marine environment. Cooperation can be done through formulation of contingent plans against pollution and sharing of data and information on the extent of exposure to pollution, risks, and remedies. As discussed above, mandatory requirement for states to share information and consult their neighbouring states either directly or through regional and global bodies ensures coordinated and collaborative access shared natural resources, hence reducing conflicts.

The Nairobi Convention[329] stipulates the regional and sub-regional measures for the protection and management of the marine and coastal environment in East Africa. Parties are required to undertake appropriate measures to prevent, reduce and combat pollution resulting directly or indirectly from exploration and exploitation of the seabed and its subsoil. Parties are required to

[327] Article 192 of UNCLOS states that States have the obligation to protect and preserve the marine environment. See also John S. Applegate (2000) The Precautionary Preference: An American Perspective on the Precautionary Principle, Human and Ecological Risk Assessment: An International Journal,6:3, 413-443, DOI: 10.1080/10807030091124554, In *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia* v. *Japan), Provisional Measures*

[328] Article 2 of the Constitution of Kenya, principles of international law including customary international law form part of the laws of Kenya.

[329] Convention for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region, 1985

cooperate in minimising pollution emergencies by individually or jointly developing contingency plans to respond to environmental pollution. Parties should inform members about imminent danger of pollution of the marine environment. This information can be conveyed to the member states directly or through international organisations. The duty to share information on dangers of pollution from activities undertaken in transboundary reservoirs binds Kenya and Somalia. In absence of unitisation, the two states have an obligation to ensure information regarding possible transboundary pollution.

4.1.1.4. Role of the African Union in unitising transboundary hydrocarbons between Kenya and Somalia

The African Union's AIMS 2050 is aimed at promoting sustainable use of ocean resources and prevent conflicts arising from transboundary resources. The AIMS 2050 encourages states to cooperate in exploitation of transboundary resources if the transboundary natural resources existing along the boundaries are likely to cause conflicts. It embraces the goals of cross-border cooperation and integration of joint management mechanisms in managing maritime spaces and the resources therein. Where states are unable to agree, the AU through its border programme plays a crucial role in promoting peaceful utilisation of transboundary resources.

The African Union Border Programme (AUBP) plays a crucial role in attaining peaceful management of transboundary resources anchored on predicting potential conflict, prevention, response, and adaptation.[330] Where the jurisdictions of states are likely to cause a transboundary resource-related conflict, the African Union border programme plays a crucial role in settling the diplomatic impasse. The African Union Border programme prevents natural resource conflicts through the adoption of preventive diplomacy hence encouraging member states to dispute peacefully.

Third-party institutions like the AU are vital in promoting the peaceful delimitation of boundaries and sharing transboundary resources within the region. Where member states do not agree, the AU

[330] African Union Border Programme was launched in 2007 to tackle potential conflict crisis arising from natural resources discovered at the border available on https://www.giz.de/en/worldwide/15759.html accessed on 10/11/2022 at 1.00am

can form a mediation panel to spearhead mediation.[331] When bilateral negotiations fail, the AU Assembly of Heads of States can nominate a mediator to settle disputes between member states and prevent the escalation of conflict. Conflict can escalate when parties seek public opinion on their positions.[332] Mediation is used settle boundary delimitations disputes and transboundary resource conflicts. In case of a possible escalation beyond the AU, diplomatic resolutions and third-party mediation through UNGA is encouraged.[333] UNGA is used as the last resort of reconciling states when regional bodies fail.

4.1.2. General structure of the Joint Development Agreement and Unitisation Agreement

Upon establishing existence of a straddling oil and gas reservoir, the two states must agree on the area of the JDA or UA and the model of management.

1. Scope

Agree on the size of the area covering a specified portion of the EEZ and continental shelf on both sides of the maritime boundary and identify the cooperation model. If it's unitization, it should be limited to the specific straddling reservoir. If it's a JDA, parties can take a holistic approach by including all transboundary resources namely common hydrocarbons exploration area, joint fisheries zone and minerals maritime security and marine scientific research. They can also limit the JDA to the continental shelf with restriction on joint exploration and exploitation of the straddling resources of the continental shelf and exclude other resources.[334]

[331] Currently, the mediation panel has been used to settle internal disputes within member states between governments and rebel groups. This mediation process has been used in the republic of Congo. A mediation panel has not been used to settle transboundary resource related conflicts.

[332] https://www.peaceau.org/uploads/eng-communique-for-the-873rd-psc-meeting-on-maritime-dispute.pdf

[333] See Thomas Prinsen, *'International Mediation - The View from the Vatican'* (1987) 3 Negot J 347 Beagle Channel settlement, the Holy Seas acted as a mediator between Chile and Argentina, see also chapter 4 the role of the UNGA in Cameroon/Nigeria, Lisa Lindsley, *'The Beagle Channel Settlement: Vatican Mediation Resolves a Century-Old Dispute' (1987)* 29 J Church & St 435

[334] Bahrain/Saudi-Arabia

A holistic JDA goes beyond the continental shelf by including joint management of the EEZ. Joint fishing grounds benefit the local indigenous community by enabling them access fishing grounds without fear of being prosecuted. Enforcement can be undertaken by the state that issued the fishing licence. A strategy of strengthening transboundary conservation like a TBMPA can be included. Due to the fragile ecosystem of the maritime area, both states should share information on exploration and exploitation activities in a straddling hydrocarbon reservoir. Experts from Somalia and Kenya can review the survey plans to the degree of the shared reservoir. The parties can independently manage MPAs within their maritime areas. Each state should manage a TBMPA found on its maritime boundary The agreement should stipulate the maritime security strategy and the scope of the security organs of each party in protecting oil and gas installations and platforms against criminal activities within the JDA.

2. Management model

Good management of the hydrocarbon explorations and exploitations within the JDZ determines the success of the JDAs. Upon identification of the area, parties need to agree on a management structure to protect their sovereign rights. Management can be a single-state model like Bahrain/Saudi Arabia JDA, a joint venture like the *United Kingdom/Norway Frigg field* or a joint authority like Nigeria/ Sao Tome Principe. In a single-state model, one party manages the field, and proceeds are proceeds with the other. In a joint venture model, each state nominates a contractor two then appoints a single unit to develop the unit reservoir. In a joint commission model, parties establish a commission or authority to manage the JDA. Parties can select one model or a combination of two models.

A combination of a joint commission and a single-state model permits one party to manage the shared field single and share the proceeds with the other party. The joint commission nominates the contractor and supervises the oil and gas activities in the JDZ. Political will and trust are vital for the successful implementation of this combination model like the *Timor Gap Treaty*. A joint commission and joint venture combination create a four-tier management system where the joint commission exercises oversight over the contractors and unit operators. This model can is used when parties are unwilling to permit a single state to manage the JDZ.

For a joint commission model, the JDA should comprise elaborate three-pillar management system. *Timor Gap Treaty*, *Nigeria/Cameroon* and *Nigeria/Sao Tome Principe*,[335] used a three-pillar management approach. A three-tier cooperation mechanism comprising officials from both states in the form of a joint ministerial commission, joint commission and the contractors is ideal. The mandate of state officials is to issue necessary approvals for managing the oil and gas reservoir. The role of the Joint Commission consisting of equal representatives appointed by both states is to manage the exploration and exploitation of minerals in the JDZ. It can approve plans, installations, and procedural safety requirements for structures. The joint commission should also regulate maritime security within the JDZ by controlling movement in and out of the JDZ. Nigeria/Sao-Tome and Principe have successfully implemented this holistic approach to JDA.

3. Resource Sharing

The main challenge in the joint management of transboundary hydrocarbons is how to share benefit from proceeds of oil and gas. Though the equal sharing of the proceeds as undertaken by the Senegal/Guinea-Bissau is ideal formula, many states share the proceeds depending on the amount available on the opposite sides of the maritime boundary. The proceeds of the oil and gas extracted be shared depending on the amount of hydrocarbon found on either side of the maritime boundary to avoid conflict.

4. Applicable law

The JDA should stipulate the general principles and guidelines for the operation of the unified field, the appointment of licensees and the selection of a single operator to operate a single unit deposit. The role of the licensees is to conclude a framework agreement, inform their respective host states, and regulate activities in the unit area. Each state reserves the right to approve each licensee's exploration plans and framework of unitization. The framework should give the licensees the power to sign further operational agreements with the unit operator. The licensees will agree on the accounting procedures, human resource management and transportation agreement.

5. Position of contractors

[335] Chapter 4

The JDA should stipulate the general principles and guidelines for operation of the unified field, the appointment of licensees and the selection of a single operator to operate the single unit deposit. The role of the contractors must be concluded in a framework agreement and their respective host states informed and their activities in the unit area regulated. Each state reserves the right to approve each contractor's exploration plans and framework of unitization. The framework should give the contractors the power to sign further operational agreements with the unit operator. The licensees will agree on the accounting procedures, human resource management and transportation agreement.[336]

UA stipulates the role of authorities, licenced contractors, and unit operator. After authorization by the authorities of both parties, the contractors then form a joint venture and sign a JOA to develop the straddling reservoirs as a unit area. The JOA should stipulate the role of each party in the UA to avoid overlap of functions. This framework was successfully used in the Frigg oil field reservoir, Stratford and Murchison oil fields and Markham oil field in the North Sea shared reservoirs.

In JDAs, independent commissions have been used to manage activities in the JDZ. The joint commission responsible for the recruitment, tendering and supervision of the JDZ may be formed. The joint commission concludes contracts with unit contractors and forwards them to the joint ministerial committee for approval and general oversight of the activities of the contractors in the JDZ. This framework is used in the Sao-*Tome/Nigeria JDZ, Nigeria/Cameroon JDZ.*

6. Financial obligations

The JDA should stipulate the taxation regime applicable to the JDZ. Parties can adopt the taxation regime of one state or apply their tax regime on their respective contractors. Alternatively, parties can delegate the formulation of a new tax regime to the joint commission. In this scenario, the joint commission develops a taxation regime different from both states and strictly applicable to the JDZ. If parties have differing views on any of the above, the contractors in the JDZ and share field can pay taxes to both parties. They should restrict tax within the statutory deductible tax and share the collected tax equally.

7. Dispute resolution

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A UA and JDA should have a dispute resolution clause comprising of methods of settling disputes arising from the unit area or JDA. Alternative dispute resolution mechanisms should be given priority because of their ability to quickly solve disputes and maintain good neighbourly relationships. Compulsory dispute resolution mechanisms like judicial settlement of disputes should be used as the last resort.

4.2.SECTION B: RECOMMENDATIONS

Kenya and Somalia recognize the negative impacts of competitive drilling and require mandatory unitization for fields straddling beyond the contract area. Declining to unitize such straddling reservoirs is a ground for the termination of a PSA. From the national law, both states are keen on eliminating the rule of capture within their jurisdiction. Including unitization provisions in the national laws indicates that the two countries are willing to manage transboundary reservoirs jointly. A transboundary unitization agreement is necessary for them to develop it together.

Based on the comparative studies undertaken in chapter 3, this chapter will recommend possible joint development options for the shared hydrocarbon resources and future cooperation areas for potential hydrocarbon deposits. The study will also guide the possibility of expanding the scope of JDZ to include a fisheries zone and marine protected area.

4.2.1. Whether Kenya and Somalia have a duty to cooperate

The overlapping maritime claims, which could threaten maritime entitlements between Kenya and Somalia, no longer exists. Clarity created by delimitation enables the two states to understand their international duties and obligations concerning a transboundary reservoir. Delimitation of the maritime boundary enables unitization straddling of a straddling reservoir hence minimizing wastage through competitive drilling. Kenya and Somalia can undertake exploration activities within their maritime limit without jeopardizing the maritime entitlements of each other.

Due to an existing maritime boundary, the duty to cooperate in developing a transboundary reservoir between Kenya and Somalia is remote. Certainty over the continental shelf limits means either of the two states can undertake exploration activities. Each state retains its sovereign rights and jurisdiction over the continental shelf and resources therein. Exclusive rights over the continental shelf permits each state to undertake exploration activities within its jurisdiction, including seismic studies. Recognition of maritime entitlements boosts confidence in cooperation between the two states. States jointly develop transboundary reservoirs when they are sure about their maritime limits through delimitation. However, the non-binding nature of the requirement to cooperate in the development of a transboundary hydrocarbon under UNCLOS after the delimitation of the maritime boundary negates cooperation efforts. Neighbouring states feel that

they have no specific duty to cooperate in the management and development of a transboundary hydrocarbon reservoirs. Though

Existing state practice shows that the absence of a transboundary unitization agreement between neighbouring coastal states does not limit them from undertaking exploration activities on their continental shelf. Though delimitation agreements contain unitization clauses, mandatory unitization crystalizes after discovering a transboundary reservoir. Each state undertakes seismic studies and other exploration activities within its maritime limits without involving the neighbouring state. Seismic studies enable states to undertake further exploration to determine the presence of hydrocarbons before proceeding to drill. They facilitate determining the presence of a transboundary reservoir and allow states to initiate joint development.

Cooperation clauses in delimitation agreements facilitate the unitization of transboundary reservoirs saving time and resources. JDAs existing before the discovery of the hydrocarbons strengthen diplomatic relations as states already have an established common goal enshrined in delimitation agreements. In such a scenario, joint exploration is ideal due to an existing JDA. Both states can licence contractors to undertake exploration activities in their respective maritime zones. *Less time* is the time taken to develop the transboundary hydrocarbon deposit.

Though delimitation ensures that exploration is limited to the continental shelf of each state, nothing stops Kenya and Somalia from undertaking joint explorations close to the maritime line. However, the strained diplomatic relations existing due to the mode of maritime delimitation used, political and economic factors come into play. Different political and economic positions of the parties may derail joint explorations. An economically strong state like Kenya ready to proceed with the exploration may feel like the economically weaker state is derailing its development, as witnessed in Senegal/Guinea-Bissau JDA. The different economic and political needs between the two states disrupts proposals for joint exploration.

Risks of breach of contract arise if exploration is not approved when one state has signed a PSA with a contractor. States choose between their contractual obligations with the contractor and international obligations to the neighbouring state. As a result, they find it easier to undertake exploration activities within the maritime limit before the finalisation of a JDA or UA. However, the duty to inform a neighbouring state arises upon discovering a transboundary reservoir. State

practice shows that where parties disagree on unitization, the obligation to share information as the minimum form of cooperation arises. The duty to share information is demonstrated in the national laws of Kenya and Somalia. Contractors are required to inform the national authorities about a transboundary reservoir.

Under UNCLOS, the general duty to cooperate can be undertaken through JDAs, UAs and information sharing. Further, the requirement to have contractors abide by the maritime laws of Kenya indicates appreciations of the general obligation to cooperate in protecting the marine environment. In addition, the Somali Petroleum law requires a contractor to inform the state when a reservoir straddling the international boundary is discovered. All states must share information on activities that are likely to cause harm to the marine environment. The duty to share information with a neighbouring state on any action likely to cause environmental harm is an obligation bestowed upon all states and enshrined in UNCLOS. Without a JDA or UA, Kenya and Somalia should share information on all discoveries made on a transboundary reservoir.

The data and information transmitted can be on a specific hydrocarbon deposit or any exploration activity within a specified distance from the maritime boundary. In the Canada/France UA, parties share information on all exploration activities undertaken up to 10NM from the maritime boundaries of each state. Even when states do not agree on unitization and joint development, the exchange of data between the two states on the amount of oil and gas extracted is mandatory. The two states must disclose information and data on all exploration and exploitation details undertaken in a straddling hydrocarbon. Information sharing is the bare minimum requirement for developing and managing transboundary reservoirs.

Due to the environmental and economic impact of the exploitation of hydrocarbons, before developing a commercially viable straddling deposit, either of the two states should inform the other about the discovered straddling hydrocarbon. The damage can be environmental or economic due to the unsustainable and competitive drilling that may arise from the non-disclosure of information. Non-disclosure of the transboundary hydrocarbon may lead to competitive drilling of the same reservoir by the two states. To avoid this, it is prudent that Kenya and Somalia disclose a transboundary reservoir's discovery, commercial viability and share information and data.

4.2.2. Unitisation Agreements

Both Kenya and Somalia permit mandatory unitization of straddling hydrocarbon reservoirs within their jurisdiction.[337] Delimitation by judicial means did not afford the two states an opportunity to negotiate and conclude a proposal for unitisation of joint development. Due to absence of a unitisation agreement, each state is free to enforce petroleum exploration laws, procedures, guidelines, and practices on its side of the transboundary deposit. Different legal regimes are applied to one deposit straddling the maritime boundary may lead to uncoordinated competitive drilling.

The uncoordinated drilling is detrimental as contractors of each state undertake drilling on the same reservoir. The use of directional drilling by the contractors of either state. will lead to breach of territorial sovereignty. The economic and environmental impact of competitive drilling of transboundary reservoirs will affect both Kenya and Somalia.

Competitive drilling will make it difficult to manage of the contract area especially from pollution arising from the activities. A Unitization agreement gives rise to shared responsibility by both states in protecting the marine environment against pollution.[338] Due to similarity in the regulation of petroleum, the two states can extent their mandatory unitisation requirement to transboundary deposits. With the ongoing exploration activities near the maritime boundary, Kenya and Somalia should consider signing a framework agreement on the unitization of straddling minerals, especially hydrocarbons.[339]

Due to the bilateral nature of a unitization agreement or JDA, authorization from the neighbouring state is a prerequisite. Unitization agreements set the ground for further cooperation agreement on regulating the contract area. Involvement of relevant government authorities and ministries needed to approve the production-sharing agreements of each government strengthens diplomatic

[337] Pg. 82

[338] Chapter 4

[339] Kenya awarded permits to ENI energy to undertake exploration of the oil blocks namely L21, L22 and L23 exploration blocks.

relations. In Somalia, parliament had to approves all agreements with a foreign government.[340] parties can jointly explore and exploit hydrocarbons in the EEZ.

4.2.3. Joint Development Agreement

JDAs provide holistic and conclusive management of transboundary reservoirs and marine environment protection. A JDA acts as a practical tool for managing transboundary resources even after the judicial settlement of maritime disputes like the *Guinea-Bissau/Senegal JDA*.[341] The collaborative tools in JDAs promote holistic management of transboundary natural resources and protection of the marine environment. JDAs require a strong political good will to ensure that it is fully implemented.

Unfortunately, the absence of political and diplomatic will may hinder joint exploration activities in the JDZ. Mistrust between the two states has hindered joint exploration like *Nigeria/Cameroon*. Due to strained relationships between Kenya and Somalia, a JDA will be a great tool to foster cooperation and restore good neighbourliness as it did in *Nigeria/Cameron*. Cooperation between *Bahrain and Saudi Arabia*[342] clearly illustrates the diplomatic importance of joint management of the continental shelf in fostering good neighbourly relationship.

Kenya and Somalia can appoint a joint management authority/commission consisting of both states to manage and coordinate exploration and exploitation activities in the JDZ. Due to the current economic, political, and diplomatic dynamics between Kenya and Somalia, a joint commission consisting of officials from both states is an indication of the goodwill to cooperate. This management framework will strengthen cooperation and ownership of the transboundary deposits as each state feels like it has a stake in the hydrocarbons.

In addition, incorporation of a holistic approach in managing transboundary deposits includes other maritime resources and areas like fisheries, maritime security, and protection of the marine environment. Kenya and Somalia can expand the JDA to include a joint fisheries zone and recognise fishing licences issued by each other. Through this, natives from both states can undertake fishing from the joint fishing grounds without fear of being penalised, hence fostering

[340] Pg. 82-83

[341] Guinea-Bissau and Senegal

[342] Chapter 3

cooperation. In addition, the two states can undertake joint marine scientific research within the JDZ.

To achieve sustainable joint fishing grounds, Kenya and Somalia should limit the grant of fishing licences in the native fishing community. A joint fisheries zone be limited to the fishing grounds that existed before maritime delimitation. Each state can recognize the licensee issued and enforcement of any criminal activity undertaken by the state that issues a licence. A joint fisheries zone will accord the native local community from both countries access to fishing grounds and reduce unwarranted arrests and human rights violations.

A JDA may be used as a step towards establishment of a TBMPA. Through the JDA cooperation arrangements, both states can develop a robust marine protected zone managed equally. A TBMPAs fosters cooperation and strengthens the political will to share the economic benefits derived from shared resources in the JDZ. Creation of a TBMPA will promote regional cooperation vital in ocean governance in East Africa and the entire WIO region.

4.2.4. Future areas of cooperation

Maritime cooperation through JDAs and unitisation agreements can be extended to the outer limit of the continental shelf. Though remote, these cooperation mechanisms can be used where Kenya's outer continental shelf limit extends into EEZ Somalia, creating a grey area. Though UNCLOS has a legal cure to this practical challenge, friendly diplomatic relations facilitated through cooperation are needed to ensure that Kenya and Somalia do not jeopardise the rights of each other in the grey area. Kenya has jurisdiction over the continental shelf, whereas Somalia has jurisdiction over the EEZ. Under UNCLOS, the right over the continental shelf does not affect the legal status of the superjacent waters and airspace.[343] In exercising exclusive rights of the continental shelf, states should not infringe on the rights and freedoms of other states.

To explore and exploit the continental shelf, the EEZ is required to lay out installations and platforms. Where another state has jurisdiction over the EEZ, permission is needed to install platforms over its EEZ. This is because such installations will limit a state's rights over its EEZ.

[343] Article 78 of UNCLOS

Therefore, a coastal state should seek permission from the neighbouring state with rights over the EEZ in the grey area before exploring and exploiting its continental shelf.

In addition, when exercising rights over the EEZ, a coastal state should have due regard to the rights and duties of other states.[344] In exercising the right over the establishment of structures and installations, due regard should be paid to the rights of other states. Through this, it cannot act in a manner likely to deny another state from exercising its rights over the continental shelf. The coastal state has an exclusive right to authorise and regulate the construction of installations and structures in the EEZ.[345] This means that two the right over the continental shelf in the grey area cannot be exercised without permission from a state that has jurisdiction over the EEZ.

Though UNCLOS and case law have provided a legal solution, the practicability of this arrangement can only be attained with cooperation from the respective states. ITLOS recognised the importance of collaboration in curing this practical challenge. In *Bangladesh v Myanmar*, the ITLOS left it to the two States to determine the experimental setups for realising their respective rights in the grey area.[346] This means that a similar principle of cooperation applies in the current situation between Kenya and Somalia. For Kenya to undertake future exploration activities in the outer limit, it will need permission from Somalia to lay platforms and installations. In addition, Consent from Somalia is needed to establish safety zones around potential oil and gas platforms. Therefore, the only legal solution to this practical challenge is cooperation by granting the necessary permissions.

Conclusion

The negotiations should be undertaken in good faith to share transboundary hydrocarbons and regional cooperation. Both parties need to consider the interests of each other. Negotiations should be guided by each state's general obligation to its neighbour and international law. Protecting the marine environment, preventing transboundary pollution, and promoting maritime security should guide negotiations between Kenya and Somalia. The two states can sustainably exploit the

[344] Article 56(2) of UNCLOS

[345] Article 60 of UNCLOS

[346] *Maritime delimitation in the Bay of Bengal*; Tafsir Mallick Ndiaye *The judge, maritime delimitation and the grey areas* Indian Journal of International Law (2015) 55(4):493–533.

straddling hydrocarbons through cooperation, jointly protect the marine environment from pollution and promote maritime security. Negotiations should focus on shared resources, straddling hydrocarbons, protecting the marine environment and promoting maritime security. Both states should recognise the existing maritime boundary. Upon agreeing, both states can issue a statement highlighting the scope for cooperation. The highlighted principles can then form a framework for unitisation and transboundary cooperation.

CONCLUSION

UNCLOS regulates all activities undertaken in the ocean by ensuring that maritime boundaries stipulate the limits of a state's jurisdiction. It stipulates the framework for delimitation of the maritime boundary and exercise of jurisdictional rights over resources found in the oceans. Resources comprise the living and non-living resources mainly, minerals, fisheries, and hydrocarbons. Unlike minerals, hydrocarbons and fisheries often straddle the maritime boundary onto a neighbouring state. While straddling fish-stock is properly regulated, hydrocarbons, which are often at the centre of maritime delimitation disputes are not properly regulated under the international law. Generally, hydrocarbons found on the continental shelf are regulated by international law mainly UNCLOS and national laws. Maritime delimitation enables coastal states determine whether a hydrocarbon reservoir is transboundary in nature. Legal challenges arise when states discover transboundary hydrocarbon reservoirs straddling the maritime boundary of the two states.

Article 76 of UNCLOS gives a scientific and legal definition of the continental shelf. The continental shelf is the seaward extension of the land territory of a coastal state. It comprises the natural prolongation of a state's land territory to the continental margin's outer edge. Natural prolongation of the land boundary is an international customary law principle affirmed in the *North Sea Continental Shelf* cases based on the geographical formation of the coastline. By its nature, a coastal state has sovereign rights over the continental shelf and all resources of the seabed and subsoil. Territorial sovereignty of a state extends to minerals found in the seabed and subsoil giving a coastal state exclusive sovereign rights over them. The sovereign rights permit a state to control hydrocarbons, minerals and living resources on the continental shelf.

In exercising exclusive rights to living and non-living resources on the continental shelf, a coastal state pay due regard to other states' rights. The right to explore the continental shelf should not interfere with the rights over the superjacent waters. The principle of due regard explains the vital role of the regime of the EEZ in the exploration and exploitation of resources of the continental shelf. Though the continental shelf regime comes before the regime of the EEZ, the two regimes complement each other. While states have an inherent entitlement to the continental shelf due to its international customary law nature, jurisdiction over the EEZ should be proclaimed. The EEZ

plays a crucial role in drilling the continental shelf to extract hydrocarbons. States undertake the installation of platforms and structures on the EEZ in order to extract hydrocarbons from the continental shelf. A coastal state with jurisdiction over the EEZ authorizes and regulates the construction of oil and gas platforms on its EEZ. In addition, the duty to protect and conserve the marine environment from transboundary pollution arising from activities undertaken by a neighbouring state on its continental shelf binds all states. A clear maritime boundary indicates each state's jurisdiction limit over the EEZ and the continental shelf. Delimitation of the continental shelf enables states to determine the limit of the Sovereign rights to avoid infringing on the sovereign rights of another state. The right over resources of the continental shelf is tied to the sovereign rights and jurisdiction over the EEZ in such a way that a coastal state must authorize the construction of platforms and installations.

Delimitation of the maritime boundary is crucial in determining maritime limits of a coastal states. Coastal states exercise exclusive rights over hydrocarbon resources of the continental shelf discovered within its maritime limits namely the EEZ and continental shelf. The continental shelf and EEZ is delimitated by mutual agreement or judicial settlement between the parties either by way of the equidistance line or the equitable. If there is a risk of disappropriation, the equidistance line can be adjusted to achieve equitable results.[347] When delimiting the continental shelf, the Court is guided by the geographical formation of the coastline. Courts and tribunals use the three-stage approach of delimiting the continental shelf and EEZ namely drawing the equidistance line from the baselines, adjusting the equidistance line to attain equity depending on the circumstances and ensuring that the equidistance line is proportional. Courts shift the equidistance line if geographical formation of the coast is likely to result in a cut-off. The presence of hydrocarbons in overlapping maritime areas do not justify shifting the equidistance line to avoid creating a transboundary reservoir. In addition, the possibility of a boundary line crossing a single hydrocarbon reservoir does not justify shifting the equidistance line.

Case laws and maritime delimitation agreements show that suspicion of hydrocarbon resources in overlapping maritime areas influence the mode of maritime delimitation. State practice shows that

[347] In the Maritime Delimitation Agreement between the Republic of Kenya and the Republic of Tanzania, the two states agreed on a parallel equidistance line.

the presence hydrocarbons in overlapping maritime areas contributes to disagreements over maritime delimitation leading to disputes. Suspected hydrocarbons derail maritime delimitation negotiations leading to maritime delimitation claims. Neighbouring states often disagree on sharing of hydrocarbons resources hence breakdown in diplomatic relationships. Mistrust among states often increases due to judicial settlement of maritime dispute hence hindering joint management of transboundary hydrocarbon reservoirs. Most states include joint development and unitisation clauses in maritime delimitation agreements in anticipation of such discoveries.

The liquid nature of hydrocarbons makes it difficult to contain them in one rock. The migratory nature of hydrocarbons makes them migrate through the rocks across the maritime boundary of the two states. Hydrocarbons do not obey the rules of maritime law, making it difficult for international law to regulate them. As discussed above, the possibility of a transboundary reservoir straddling the maritime boundary is not a ground for shifting the equidistance line. A transboundary hydrocarbon reservoir creates uncertainty on whether a state has exclusive rights over the oil and gas reservoir straddling the maritime boundary of a neighbouring state. The solution granted by international law in such a situation is for states to cooperate and jointly explore the straddling reservoirs. Cooperation prevents one state from unilaterally developing a transboundary reservoir to the detriment of a neighbouring states. Unlike overlapping claims where there is uncertainty, delimitation enables states identify transboundary resources, cooperation models and applicable framework in the management of transboundary resources.

Generally, international law prohibits the unilateral development of oil and gas due to the likelihood of causing irreversible effects on the sovereignty of another state and impacting the marine environment. Sovereign rights over resources of the continental shelf are pegged on the economic benefit that can be derived from mineral resources of the continental shelf. Detriment to the sovereignty of another state especially economic loss arising from unilateral development of straddling resources is not encouraged due to the potential to lead to conflict. Therefore, if a deposit is discovered to straddle, one state is under a duty to inform the neighbouring state. Although UNCLOS is silent on transboundary resources and the duty to cooperate after delimitation of the maritime boundary, it encourages cooperation between states to avoid breaches of the rights of other states. States have used JDAs to solve the technical challenges arising from a transboundary reservoir. However, international law does not obligate states sharing hydrocarbons to enter joint

development agreements. It only encourages them to cooperate in good faith. State cooperate by notifying the neighbouring state about the presence of a hydrocarbon deposit and sharing information and data or entering into JDAs.

Most states include unitization clauses in maritime delimitation agreements, making it easier to conclude JDAs when a transboundary reservoir is discovered. States may opt to undertake a holistic approach to JDAs by including protecting the marine environment. When delimitation is through a judicial settlement, states initiate negotiations after discovering an actual transboundary reservoir. The success of negotiations depends on the political will and good neighbourhood between the two states. The two states negotiating are at liberty to restrict their cooperation to the transboundary reservoir or expand the JDZ to include other maritime resources and issues. From state practice,[348] the political will of states determines the nature of JDAs and UAs signed. Through JDAs, states agree on the formula of sharing the proceeds of petroleum extracted depending on the size of hydrocarbons located on each side of the maritime boundary or equally. Where the trust and diplomatic relationships between neighbouring states are strong, like Saudi Arabia/Bahrain, one state can exercise jurisdiction of the shared reservoirs and share proceeds of the sale with the other state.

Where trust issues exist, states establish a joint commission to manage the JDZ. To achieve a holistic approach to managing shared hydrocarbons, states like Nigeria/Sao Tome Principe and Nigeria/Cameroon established a joint commission comprising members from both countries. They agreed on the legislative framework, fiscal policy and operational procedures applicable to the JDA. In addition to the economic benefit of JDAs, states benefit from the environmental protection undertaken in JDZ. Joint inspections undertaken by either state in JDZs and unit areas facilitate compliance with safety procedures. Through this, measures aimed at protecting the marine environment are enforced.

UAs enable states to develop transboundary reservoirs as unit deposits hence equally sharing proceeds either equally or as per the amount of oil and gas discovered on either side of the maritime boundary. From state practice, each state contracts an operator who then forms a joint venture or contracts another operator to manage the unit deposit. Operators licenced by each state are

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responsible for managing all activities undertaken in the unit deposit and reporting back to their respective states. The two states agree on the applicable national law to ensure the smooth operation of the unit deposit.

Unit operators agree on human resources, transportation and compliance with safety procedures and environmental laws. Some states enforce their national laws on platforms found on their side of the maritime boundary. Royalties derived from the oil and gas extracted are shared depending on the profit-sharing model agreed upon by states, either equally or not. In addition, some UAs permit one state to manage the unit area and share the proceeds from the sale of oil and gas with it. However, this management model requires a high level of trust between states and may not be applied where states have strained relationships.

The Discovery of a transboundary hydrocarbon reservoir hinders the conclusion of JDAs and UAs after maritime delimitation. In overlapping maritime areas, they undertake to cooperate when they discover transboundary hydrocarbons after delimitation. However, where the maritime boundary is already delimited, political goodwill determines the possibility of concluding a JDA. Severed neighbourly relationships make it difficult for states to cooperate in managing a transboundary reservoir. Maritime disputes deteriorate good neighbourly relationships making it difficult for states to agree, especially when a maritime boundary has been delimitated by judicial settlement. In regions prone to maritime insecurity, political differences over transboundary resources may encourage terrorist attacks on oil and gas platforms. Though each state has sovereign rights over the oil and gas in a shared transboundary reservoir and can exploit from its maritime zone, competitive drilling of such a reserve may further severely strain diplomatic relationships.

Joint development of a transboundary reservoir reduces wastage from competitive drilling, which is economically and environmentally detrimental to the neighbouring states. Unitisation agreements reduce conflicts from exploiting a shared reservoir, as one state may feel disenfranchised. Unitisation reduces attacks which can escalate due to competitive drilling of transboundary reservoirs. In addition, when states cooperate, joint measures are undertaken to protect the marine environment and prevent pollution. Joint inspections undertaken by both countries ensure that operators adhere to health, safety and environmental laws. Where states do not enter into JDAs, the duty to cooperate through regional bodies to develop rules, procedures

and guidelines on protecting the marine environment requires states to share information on activities with risks of pollution undertaken within their jurisdiction.

Kenya and Somalia are coastal states located in the WIO region in East Africa. Generally, the WIO region is directly or indirectly affected by maritime relations in the region. Generally, most states in the WIO have delimitated their maritime boundaries through maritime agreements. Mauritius/Seychelles concluded a JDA on the continental shelf through which the two states will share any hydrocarbons or minerals discovered in the JDZ. Kenya/Tanzania should have included a unitisation clause in their maritime delimitation agreement. Though few states have delimited their maritime boundary, most maritime areas are yet to be delimited. Due to the resources like hydrocarbons in the region, attempts to delimit the maritime boundary through agreement failed. Madagascar has been unable to delimit its maritime boundary due to suspected hydrocarbons. Currently, there is an ongoing maritime dispute between Mauritius and. Maldives. The ICJ delimited the Kenya/Somalia maritime boundary in 2021.

In the maritime dispute between Kenya and Somalia, hydrocarbons were the main cause of disagreement. Even with the existing maritime boundary, a legal challenge arising from transboundary hydrocarbon resources still exists As discussed above, the court delimited the maritime boundary between Kenya and Somalia. The ICJ adopted the three-stage delimitation method to avoid a cut off Kenya's continental shelf. Due to the existing parallel maritime boundary between Kenya and Tanzania, failing to shift the equidistance line could have led to a possible cut-off of the continental shelf. The two states in the.

Generally, international law prohibits the unilateral development of oil and gas, which may cause irreversible effects on the sovereignty of another state and impact the marine environment. Sovereignty rights over resources of the continental shelf are pegged on the economic benefit that can be derived from mineral resources of the continental shelf. Detriment to the sovereignty of another state, especially economic loss arising from unilateral development of straddling resources, is not encouraged due to the potential to lead to conflict. Therefore, if a deposit is discovered to straddle, one state must inform the neighbouring state.

Kenya and Somalia share a maritime boundary in the West Indian Ocean. Currently, both states are undertaking hydrocarbon explorations within their maritime zones. Kenya has contracted ENI Kenya to proceed with explorations for oil and gas close to the maritime boundary, and some oil

blocks have been found lying across the maritime boundary. There is a possible transboundary reservoir lying across the maritime boundary of Kenya and Somalia. Such a transboundary reservoir can be exploited from both sides by either Kenya or Somalia leading to competitive drilling.

Both. Kenya and Somalia prohibit competitive drilling of oil and gas deposits discovered within their jurisdictions. Their national laws require contractors who discover a deposit straddling beyond the contract area to unitize the deposit with the neighbour and jointly develop the deposit as a unit. In addition, both states require a contractor to inform them if a deposit discovered crosses the maritime boundary. Including mandatory unitization provisions in the national law indicates that both states are open to jointly developing transboundary deposits, eliminating legal challenges. The key challenge to unitization is the need for more political goodwill occasioned by strained relationships. The strained relationship arose from the maritime boundary delimitation dispute between Kenya and Somalia. In such a scenario, if the two states are unable to agree, regional bodies like the AU can be used to mediate.

To attain AU's 2050 AIMS, sustainable use of maritime space is paramount. To achieve this, members of the AU need to cooperate in managing maritime resources. Both Kenya and Somalia and signatories to UNCLOS and the Nairobi Convention require states to cooperate in protecting the marine environment. Transboundary resources like hydrocarbons have the potential to cause conflict hence derailing the 2050 dream. Therefore, the AU plays a key role in reconciling the two states to ensure that transboundary reservoirs are jointly managed sustainably without jeopardizing either state's territorial jurisdiction of either state.

Existing state practice from proves that joint development of transboundary reservoirs is beneficial to both states. Through joint development and unitization agreements, regional cooperation can be fostered, hence restoring good neighbourly relationships. Cooperation mechanisms fostered through JDAs can be used in future to develop and manage resources found in the potential grey area located within Kenya’s outer limit of the continental shelf and Somalia’s EEZ.

REFERENCES

1. Franckx, E. (1998). Regional Marine Environment Protection Regimes in the Context of UNCLOS, the International Journal of Marine and Coastal Law, 13(3), 307-324.
2. Vasco Becker-Weinberg, Theory and practice of joint development in international law, in: Cooperation and Development in the South China Sea, edited by Zhiguo Gao, Yu Jia, Haiwen Zhang and Jilu Wu (China Democracy and Legal System Publishing House: Beijing, 2013).
3. S Marr, The Southern Bluefin Tuna cases: the precautionary approach and conservation and management of fish resources, *European Journal of International Law*, Volume 11, Issue 4, 2000, Pages 815–831, https://doi.org/10.1093/ejil/11.4.815
4. John S. Applegate (2000) The Precautionary Preference: An American Perspective on the Precautionary Principle, Human and Ecological Risk Assessment: An International Journal,6:3, 413-443, DOI: 10.1080/10807030091124554
5. David Colson, "Developments in Maritime Law and Practice", in David A Colson and Robert W. Smith, eds., International Maritime Boundaries, Vol. V (Leiden/Boston: Martinus Nijhoff Publishers), 3199-3222
6. Ian Townsend Gault, Joint Development of Offshore Mineral Resources - Progress and Prospects for the Future, Natural Resources Forum @ United Nations, New York, 1988
7. John Abrahamson, Joint Development of Offshore Oil and Gas Resources in the Arctic Ocean Region and the United Nations Convention on the Law of the Sea, Brill, 2013.
8. In Vasco Becker-Weinberg, Joint Development of Hydrocarbon Deposits in the Law of the Sea, Hamburg Studies on Maritime Affairs (HAMBURG, volume 30), (2014),
9. Neil Craik, The Duty to Cooperate in International Environmental Law: Constraining State Discretion through Due Respect, Yearbook of International Environmental Law, Volume 30, Issue 1, 2019
10. Dennis O. John G. Maurice K. Erick N. Delineation of Subsurface Structures Using Gravity Data of the Shallow Offshore, Lamu Basin, Kenya Hindawi International Journal of Geophysics Volume 2022 available on https://reader.elsevier.com/reader/sd/pii/S1876380413600762?token=1A6BC2ED3B158A8CDC717CC9C1A77687B09C16BDA4A58A4AE90586474B2FA4D06AF7A3A149E

9945D2B9E3CE6759B0CC1&originRegion=eu-west-1&originCreation=20220804123747 accessed on 8.4.2022 at 2.38pm.

11. Davidson L. M. Arthur T. J. Smith G. F. & Tubb S. Geology and hydrocarbon potential of offshore SE Somalia (2017) Tectonics and petroleum systems of East Africa Petroleum Geoscience Vol. 24 | 2018 | pp. 247–257 available on https://pubs.geoscienceworld.org/pg/article-abstract/24/3/247/520498/Geology-and-hydrocarbon-potential-of-offshore-SE?redirectedFrom=fulltext accessed on 28.7.2022 at 8.45am.
12. Theresa A. C. Normative and empirical Research Methods: Their usefulness and Relevance in the Study of Law as an object (2016). Procedia-Social and Behavioural Science 219 (2016) 201-207.
13. Aurlis A. Essays on the Doctrinal Study of Law; Springer available on https://books.google.nl/books?hl=en&lr=&id=QHXnqRKaHGkC&oi=fnd&pg=PR8&dq=essays+on+doctrinal+study+of+law&ots=vKw-YBGuq0&sig=josSV038Q7Ee3MF9FJPLwxsKegg&redir_esc=y#v=onepage&q=essays%20on%20doctrinal%20study%20of%20law&f=false accessed on 29.8.2022 and 10am.
14. AloysiusP. L. (2007) Jurisdiction and Compliance in Recent Decisions of the International Court of Justice, European Journal of International Law, Vol. 18, Issue 5.
15. Marko Divac Öberg, The Legal Effects of Resolutions of the UN Security Council and General Assembly in the Jurisprudence of the ICJ The European Journal of International Law Vol. 16 no.5 (2006)
16. Lando, M. (2019). *Maritime Delimitation as a judicial process (*Cambridge Studies in International and Comparative Law). Cambridge: Cambridge University Press.
17. Gregory J. Kerwin, Role of United Nations General Assembly Resolutions in Determining Principles of International Law in United States Courts, The 1983 DUKE L.J. 876 (1983).
18. Natalie N. E. (2019). The Law of Shared Hydrocarbon Resources and the Question of Shared State Responsibility for Environmental Harm Arising from Their Cooperative Management
19. Alex G. Oude Elferink, The Law of Maritime Boundary Delimitation: A case study of the Russian Federation, (1962),

20. Ann L. Hollick, 'U.S. Oceans Policy: The Truman Proclamations' (1976) 17 Va J Int'l L 23,
21. Kunz, J. (1956). Continental Shelf and International Law: Confusion and Abuse: American Journal of International Law, 50(4) 828-853. doi:10.2307/; Shigeru Oda, A Reconsideration of the Continental Shelf Doctrine, Tulane Law Review, Vol. 32 (1957), pp. 21-36
22. Alex Elferink, Maritime Boundary Delimitation: The Case Law. Is it Consistent and Predictable? Cambridge (2018), the EEZ and continental shelf have been described as functional regimes indicating the sovereign rights of a coastal states
23. Yoshifumi Tanaka, Predictability and Flexibility in the Law of Maritime Delimitation,
24. Donat Pharand, Umberto Leanza, Continental Shelf and the Exclusive Economic Zone delimitation and legal regime, (1992) Martinus Nijhoff Publishers Vol. 19 pp. 81-94
25. Stephen Fietta & Robin Cleverly, The practitioner's guide to Maritime Boundary Delimitation, (2017) Oxford University Press,
26. Sousa, I. (2014). Maritime Territorial Delimitation and Maritime Security in the Atlantic (pp. 10-11).
27. Future Scientific Paper, European Union 7th Framework Programme, European commission Project Number 320091.
28. Theodore Okonkwo, Maritime Boundaries Delimitation and Dispute Resolution in Africa, Beijing Law Review, Vol.8 No.1, 2017
29. Luciana Palmeira, The Brazillian Regulatory Systems for Unitisation and offshore Decommissioning- An analysis of the Transnational Legal Order Paul Warthong (2016)
30. Vasco Becker-Weinberg, Joint Development of Hydrocarbon Deposits in the Law of the Sea, Springer-Verlag Berlin Heidelberg (2014).
31. L. M. Davidson*, T. J. Arthur, G. F. Smith & S. Tubb, Geology and hydrocarbon potential of offshore SE, Petroleum Geoscience, Vol. 24 | 2018 | pp. 247–257 (2017).
32. Hannah Kearns, Douglas Paton, Neil Hodgson, Karyna Rodriguez, Roxana Stanca, Abdulkadir Abiikar Hussein Offshore Somalia: Defining crustal type and its implications for prospectively, (2015) available on
33. Viviane Menezes, Heather Furey, Amy Bower, Matthew Mazloff, Deep Madagascar Basin (DMB) Experiment: A Quest to Find the Abyssal Water Pathways in the Southwest Indian

Ocean located 5500 m, southeast of Madagascar available on https://www2.whoi.edu/site/bower-lab/deep-madagascar-basin-experiment/

34. Edwin Alfonso Sosa, Tide-Generated Internal Solitary Waves generated on a large sill of the Mascarene Plateau excite Coastal Seiches in Agalega and Rodrigues Islands, (2017) https://www.researchgate.net/publication/312652070_Tide-Generated_Internal_Solitary_Waves_generated_on_a_large_sill_of_the_Mascarene_Plateau_excite_Coastal_Seiches_in_Agalega_and_Rodrigues_Islands/figures?lo=1
35. Jennifer Klimke, Dieter Franke, Estevão Stefane Mahanjan, and German Leitchenkov,Tie points for Gondwana reconstructions from a structural interpretation of the Mozambique Basin, East Africa and the Riiser-Larsen Sea, Antarctica, Solid Earth, (2018) extents 5000 m, south of the Mozambique channel available on https://www.researchgate.net/publication/322507389_Tie_points_for_Gondwana_reconstructions_from_a_structural_interpretation_of_the_Mozambique_Basin_East_Africa_and_the_Riiser-Larsen_Sea_Antarctica/figures?lo=1
36. Paul Musili Wambua, The jurisdictional challenges to the prosecution of piracy cases in Kenya: mixed fortunes for a perfect model in the global war against piracy WMU J Marit Affairs (2012)
37. Sushma Mattan-Moorgawa, Hutheifa raad Ali, Ocean Acidification (Oa) White Paper Draft Ocean Acidification Paper For Western Indian Ocean Region, 2018 available on https://www.researchgate.net/publication/328031187_OCEAN_ACIDIFICATION_OA_WHITE_PAPER_DRAFT_OCEAN_ACIDIFICATION_PAPER_FOR_WESTERN_INDIAN_OCEAN_REGION accessed on 1.12.2022 at 1pm.
38. Ana E. Bastida, Adaeze Ifesi-Okoye, Salim Mahmud & James Ross, 'Cross-Border Unitization and Joint Development Agreements: An International Law Perspective' (2007) 29 Hous J Int'l L 355
39. Luciana Palmeira, The Brazillian Regulatory Systems for Unitisation and offshore Decommissioning- An analysis of the Transnational Legal Order Paul Warthong (2016), see also Vasco Becker-Weinberg, Joint Development of Hydrocarbon Deposits in the Law of the Sea, Springer-Verlag Berlin Heidelberg (2014).
40. Lagoni, R. (1979). Oil and Gas Deposits across National Frontiers. American Journal of International Law, 73(2), 215-243. doi:10.2307/2201608.

41. Alberto Szekely, 'The International Law of Submarine Transboundary Hydrocarbon Resources: Legal Limits to Behavior and Experiences for the Gulf of Mexico', 26 Nat. Resources J. 733 (1986) https://digitalrepository.unm.edu/nrj/vol26/iss4/8 accessed 17 July 2022
42. Nigel Bankes, Maria Madalena das Neves. 2020. The United Nations Convention on the Law of the Sea and the Arctic Ocean. The Palgrave Handbook of Arctic Policy and Politics, pages 375-391.
43. Cherepovitsyn, A. Moe and N. Smirnova, 'Development of Transboundary Hydrocarbon Fields: Legal and Economic Aspects' (Indian Journal of Science and Technology, Vol 9(46), 2016 https://sciresol.s3.us-east-2.amazonaws.com/IJST/Articles/2016/Issue-46/Article63.pdf accessed 24 October 2022
44. LEFEBER, R., Law, A. & U. of A., 2015. International Law and the Use of Maritime Hydrocarbon Resources, IFRI: Institut Français des Relations Internationales, see also
45. Frank Jahn, Mark Cook, Mark Graham Hydrocarbon Exploration and Production, Amsterdam, 2nd Edition, Elsevier, (2008)
46. Michael A. Arthur, David R. Cole, Unconventional Hydrocarbon Resources: Prospects and Problems Geoscience world Vol. 10. No. 4, Elements (2014) 10 (4): 257–264; see also David Edward Pierce Coordinated Reservoir Development-An Alternative To The Rule Of Capture For The Ownership And Development Of Oil And Gas Journal of Energy and Policy Law, Vol. 4, No. 2 of 1983, available on https://heinonline.org/HOL/Contents?handle=hein.journals/lrel4&id=1&size=2&index=&collection=journals
47. Bruce M. Kramer and Owen L. Anderson, ''the rule of capture-an oil and gas perspective'', in: Environmental Law (2005).
48. Vasco Becker-Weinberg, the internationalization of marine natural resources in UNCLOS in: Recent Developments in the Law of the Sea, edited by Rainer Lagoni, Peter Ehlers and Marian Paschke (LIT Verlag: Berlin, Munster, Vienna, Zurich, London, 2010), pp. 9–54
49. Vasco Becker-Weinberg, Theory and practice of joint development in international law, in: Cooperation and Development in the South China Sea, edited by Zhiguo Gao, Yu Jia, Haiwen Zhang and Jilu Wu (China Democracy and Legal System Publishing House: Beijing, 2013).

50. John Abrahamson, Joint Development of Offshore Oil and Gas Resources in the Arctic Ocean Region and the United Nations Convention on the Law of the Sea, Brill, 2013.
51. Al Hudec & Van Penick, 'British Columbia Offshore Oil and Gas Law' (2003) 41 Alta L Rev 101,
52. Skaten, M. 2018. “Ghana’s Oil Industry: Steady Growth in a Challenging Environment.” OIES Paper. Oxford Institute for Energy Studies; Ong, D. (1999).
53. Ong, D. (1999). Joint Development of Common Offshore oil and Gas Deposits: “Mere” State Practice or Customary International Law? American Journal of International Law, 93(4), 771-804. doi:10.2307/2555344. Virginia’s commentary on Law of the Sea
54. Ian Townsend-Gault, Zones of Cooperation in the Oceans – Legal Rationales and Imperatives in Maritime Border Diplomacy by Myron H. Nordquist, John Norton Moore, John Norton Moore, and Judy Ellis, Brill (2016),
55. Vasco Becker-Weinberg says that applying the rule of capture to onshore oil production in the United States of
56. Jacqueline Lang Weaver, Unitization of Oil and Gas Fields in Texas (Resources for the Future, Inc.: Washington, D.C., 1986).
57. Getting the Deal Through, Oil Regulation 2012, edited by Bob Palmer (Law Business Research Ltd.: London, 2012)
58. Youri van Logchem, 'The Status of a Rule of Capture under International Law of the Sea with Regard to Offshore Oil and Gas Resource Related Activities' (2018) 26 Mich St Int'l L Rev 195,
59. Tyler, T. J., Loftis, J. L., Hawker, E. E., Vizcarra, H. V., & Khan, M. I. (2013). "Developing Arctic Hydrocarbon Resources: Delineating and Delimiting Boundaries for Field Development in the Arctic". In The Regulation of Continental Shelf Development. Leiden, The Netherlands: Brill | Nijhoff. Available on https://doi.org/10.1163/9789004256842_018
60. Oystein Jensen, 'The Barents Sea' (2011) 26 Int'l J Marine & Coastal L 151
61. Malcom N. Shaw, International Law, sixth edition, Cambridge University Press, Cambridge (2008).
62. Tyler, T. J., Loftis, J. L., Hawker, E. E., Vizcarra, H. V., & Khan, M. I. (2013). "Developing Arctic Hydrocarbon Resources: Delineating and Delimiting Boundaries for Field

Development in the Arctic". In The Regulation of Continental Shelf Development. Leiden, The Netherlands: Brill | Nijhoff. doi: https://doi.org/10.1163/9789004256842_018

63. Christina Leb, Cooperation in the Law of Transboundary Water Resources, Cambridge University Press (2013)
64. Owen Mcintrye, Environmental Protection of International Watercourses under International Law, Routledge, London & New York (2016).
65. S Rosenne Developments in the Law of Treaties 1945-1986 (Cambridge University Press 1989) at 175 (referring to the general role of good faith in decision-making, whether in a second or third-party context). See also Cameron Hutchison 'The Duty to Negotiate International Environmental Law Disputes in Good Faith' (2006) 2 McGill International Journal of Sustainable Development Law and Policy (forthcoming).
66. Malcom N. Shaw, International Law, sixth edition, Cambridge University Press, Cambridge (2008).
67. Lac Lanoux (n 1) at 140; United States—Import Prohibitions of Certain Shrimp and Shrimp Products, Recourse to Article 21.5 of the DSU by Malaysia WT/DS58/AB/RW (2001).
68. J. C. Woodliffe, International Unitization of an Offshore Gas Field, 26 INT'l & COMP. L.Q. 338 (1977).
69. In R. Maritvold, Frigg Field Reservoir Management, North Sea Oil and Gas Reservoirs—II – (1990), the Frigg field straddled the Norwegian - UK border and was situated in block 25/1 on the Norwegian side and block 10/1 on the British side
70. Eivind Torheim, Changing perceptions of a gas field during its life cycle: a Frigg field case study in Quantification and Prediction of Petroleum Resources edited by A.G. Dor6 and R. Sinding-Larsen. NPF Special Publication 6, pp. 273-289, Elsevier, Amsterdam. Norwegian Petroleum Society (NPF), 1996.
71. J. C. Woodliffe, International Unitisation of an Offshore Gas Field, 26 INT'l & COMP. L.Q. 338 (1977), a Norwegian inspection officer was authorized to undertake safety inspections on the installations on the UK side in accordance with the UK safety guideline.
72. Peter D Cameron, The Rules of Engagement: Developing Cross-Border Petroleum Deposits in the North Sea and the Caribbean, Cambridge University Press (2008) available on

https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=Peter%20D%20Cameron&eventCode=SE-AU

73. Willy Streneng, Reaching Agreement on International Exploitation of Ocean Mineral Resources (With Special Reference to The Joint Development Area Between Jan Mayen And Iceland, Energy Vol. IO. No. 314.1985.
74. In Clive Schofield, Blurring the Lines? Maritime Joint Development and the Cooperative Management of Ocean Resources, in Frontier Issues in Ocean Law: Marine Resources, Maritime Boundaries and the Law of the Sea (2009) available on https://www.degruyter.com/document/doi/10.2202/1539-8323.1103/html
75. In Peter A. Glover, The Strength of the Timor-Leste Case and Section 51 of the Constitution, 24 Australian Resources & ENERGY L.J. 307 (2005)
76. Damian Grenfell, 'Nation Building and the Politics of Oil in East Timor' (2004) 22 ARENA Journal 45, 47, Timor Sea Office, Press January 2005 (2005) at 19 April 2005
77. East Timor wins equal share of Sunrise', Australian Financial Review (Sydney) 14 May 2005, 5.
78. Fereidun Fesharaki, Joint Development of offshore Petroleum Resources: The Persian Gulf Experience, in Mark J. Valencia the South China Sea: Hydrocarbon Potential and Possibilities of Joint Developments, Energy Vol. 6 No. 11.
79. NH Thao, Joint development in the Gulf of Thailand, IBRU Boundary and Security Bulletin, 1999 - durham.ac.uk
80. Clive Schofield, Unlocking the Seabed Resources of the Gulf of Thailand, Contemporary Southeast Asia, August 2007, Vol. 29, No. 2 (August 2007) available on https://www.jstor.org/stable/25798832
81. Economics, Politics and the Rule of Law in the Nigeria-Sao Tomé e Príncipe Joint Development Zone," Journal of International Affairs 59, 1 (Fall/Winter 2005).
82. Eddy Lenusira Wifa, Mark Amakoromo, Ibiateli Johnson-Ogbo, The role of a Joint Development Agreement (JDA) in resolving the conflicts and uncertainties over maritime boundary delimitation. A missed opportunity in the Bakassi case in The Bakassi Dispute and the International Court of Justice Cameroon, Routledge, (2008)

83. Junaidu Bello Marshall, 'Joint Development of Offshore Oil and Gas in the Gulf of Guinea: A Case of Energy Security for Nigeria and Cameroon' (2014) 32 Journal of Law, Policy and Globalization 146
84. Law of the Sea Bulletin 79, Treaty concerning the Joint Exercise of Sovereign Rights Over the Continental Shelf in the Mascarene Plateau Region between the Government of the Republic of Mauritius and the Government of the Republic of Seychelles
85. Myron H. Nordquist, John Norton Moore, John Norton Moore, and Judy Ellis, Maritime Border Diplomacy University of Virginia. Center for Oceans Law and Policy. Conference (35th: 2011: Bali, Indonesia)
86. Ibid. In the 2008 Japan-China Agreement on Cooperation for the Development of East China Sea Resources over Shirakaba field, China and Japan acknowledged that the arrangement is not a joint development per se but Japan's investment to the oil and gas development activities of China.
87. Cecilia A Low, Marine Environmental Protection in Joint Development Agreements, Journal of Enenrgy and Natural Law, Vol. 20, 2012, 45-74; Mohammed Naseem, Saman Naseem, International Energy Law, Wolters, Kluwer, 2003;
88. Paul Michael Blyschak, Offshore oil and gas projects amid maritime border disputes: applicable law, The Journal of World Energy Law & Business, Volume 6, Issue 3, September 2013, 210-233 available on https://doi.org/10.1093/jwelb/jwt008
89. David M. Ong, Joint Development of Common Offshore oil and Gas Deposits: "Mere" State Practice or Customary International Law? American Journal of International Law, Volume 93, Issue 4, October 1999.
90. Chukwuemeka Mike Okori, Have the Modern approaches to Unit Development of Straddling Petroleum Resources Extinguished the Applicability of the Primordial Law Of Capture?
91. Junaidu Bello Marshall, Joint Development of Offshore Oil and Gas in the Gulf of Guinea: A Case of Energy Security for Nigeria and Cameroon, Journal of Law, Policy and Globalization, Vol.32, 2014.
92. G.H. Blake and R.E. Swarbrick, 'Hydrocarbons and International Boundaries: A Global Overview' in G. Blake et al. (Eds). Boundaries and Energy: Problems and Prospect (Kluwer Law International, 1998).

93. SONG XUE, Why Joint Development Agreements Fail: Implications for the South China Sea Dispute, Contemporary Southeast Asia Vol. 41, No. 3 (2019).
94. Ian Townsend-Gault, “Joint Development of Offshore Mineral Resources Progress and Prospects for the Future”, Natural Resources Forum 12, no. 3 (August 1988): 275; John Abrahamson, Joint Development of Offshore Oil and Gas Resources in the Arctic Ocean Region and the United Nations Convention on the Law of the Sea”, Brill Research Perspectives in the Law of the Sea 1, no. 4 (August 2018)
95. Ian Townsend-Gau, William G. Stormont Offshore Petroleum Joint Development Arrangements: Functional Instrument? Compromise? Obligation? London. Graham & Trotman, (1995), domestic decisions on fishing, navigation, petroleum and environmental protection not only impact the neighbouring states but distant states.
96. Salit Kark, Eran Brokovich,Tessa Mazor, Noam Levin, Emerging conservation challenges and prospects in an era of offshore hydrocarbon exploration and exploitation, Conservation Biology review, (2015 Emerging conservation challenges and prospects in an era of offshore hydrocarbon exploration and exploitation (wiley.com)
97. Damia` Barcelo´ l Andrey G. Kostianoy, Oil and Gas Pipelines in the Black-Caspian Seas Region. The Handbook of Environmental Chemistry 51. Springer, 2016
98. Myron H. Nordquist, et al. The Regulation of Continental Shelf Development: Rethinking International Standards. Brill | Nijhoff, 2013.
99. Masahiro Miyoshi, the Joint Development of offshore Oil and Gas in relation to Maritime Boundary Delimitation Maritime Briefing Vol. 2, No. 5 (1999)
100. Robert Beckman and Leonardo Bernard, Framework for the Joint Development of Hydrocarbon Resources Asian Yearbook of International Law, Volume 22 (2016).
101. Mark J. Valencia, Taming Troubled Waters: Joint Development of Oil and Mineral Resources In Overlapping Claim Areas, San Diego Law Review Vol. 23: 661, 1986.
102. Wartini Sr., 'The Role of the Coastal States to the Protection of Marine Environment in Joint Development Agreement' (2017) 14 Indonesian J Int'l L 433
103. David M. Ong, "Joint Development of Common Offshore Oil and Gas Deposits: "Mere" State Practice or Customary International Law? Vol. 99, Am. J. Int'l L. (October 1999).

104. Bastida, Ana E., et al. "Cross-border unitization and joint development agreements: an international law perspective." Hous. J. Int'l L. 29 (2006).

105. Bankes, N. (2019). "Chapter 5: Managing environmental risks through the terms of maritime delimitation and related agreements". In Managing the Risk of Offshore Oil and Gas Accidents. Cheltenham, UK: Edward Elgar Publishing;

106. Martin-Nagle, R. (2016). Transboundary Offshore Aquifers, Brill Research Perspectives in International Water Law, 1(2).

107. Rothwell, Donald & Elferink, Alex & Scott, Karen & Stephens, Timothy. (2015). The Oxford Handbook of the Law of the Sea; See also Tanaka, Y. (2019).

108. *The International Law of the Sea.* (3rd ed.). Cambridge: Cambridge University Press.

109. René Jean Dupuy, Daniel Vignes A handbook on the new law of the sea. 1 (1991) Martinus Nijhoff Publishers.

110. First global integrated marine assessment report available on https://www.un.org/regularprocess/content/first-world-ocean-assessment#:~:text=The%20First%20Global%20Integrated%20Marine%20Assessment%2C%20also%20known,State%20of%20the%20Marine%20Environment%2C%20including%20Socioeconomic%20Aspects assessed on

111. Report of the ILC A/77/10 Seventy-third session available on https://legal.un.org/docs/?path=../ilc/reports/2022/english/a_77_10_advance.pdf&lang=E accessed on 15.10.2022 at 11.00pm.