World Maritime University

The Maritime Commons: Digital Repository of the World Maritime University

World Maritime University Ph.D. Dissertations

Dissertations

2020

Development of an Overarching Transboundary Geospatial Framework: Selected Regimes in Perspective

Bryan Buxton-Barnor

Follow this and additional works at: https://commons.wmu.se/phd_dissertations

Part of the [Transportation Commons](#)

Recommended Citation

Buxton-Barnor, Bryan, "Development of an Overarching Transboundary Geospatial Framework: Selected Regimes in Perspective" (2020). *World Maritime University Ph.D. Dissertations*. 16.
https://commons.wmu.se/phd_dissertations/16

This Thesis is brought to you courtesy of Maritime Commons. Open Access items may be downloaded for non-commercial, fair use academic purposes. No items may be hosted on another server or web site without express written permission from the World Maritime University. For more information, please contact library@wmu.se.

DEVELOPMENT OF AN OVERARCHING TRANSBOUNDARY GEOSPATIAL FRAMEWORK

by

BRYAN BUXTON-BARNOR

WMU RESEARCH REPORT SERIES
No. 16, November 2021

DEVELOPMENT OF AN OVERARCHING TRANSBOUNDARY
GEOSPATIAL FRAMEWORK

Selected Regimes in Perspective

WMU RESEARCH REPORT SERIES

No. 16, November 2021

SERIES EDITORS:

Maximo Q. Mejia, Jr.

Jens-Uwe Schröder-Hinrichs

The aim of the WMU Research Report Series is to publish PhD dissertations, essays, monographs, articles, policy papers, occasional papers, and reports to promote academic research and publication among resident colleagues at the World Maritime University as well as other scholars associated with it. Publications in this series will be published in moderately priced limited editions.

Short excerpts from this publication may be reproduced without authorization, on condition that the source is indicated. For rights of reproduction or translation, application should be made to –

The Editors, WMU Research Report Series

World Maritime University

P.O. Box 500

201 24 Malmö

Sweden

Development of an Overarching Transboundary Geospatial Framework

Selected Regimes in Perspective

Bryan Buxton-Barnor
Ghana

A dissertation submitted to the World Maritime University in partial fulfilment of
the requirements for the award of the degree of
Doctor of Philosophy in Maritime Affairs

WMU RESEARCH REPORT SERIES

No. 16, November 2021

WMU Publications

Copyright © Bryan Buxton-Barnor

Cover photo by © Maximo Q. Mejia Jr.

The views expressed are those of the author(s) and do not necessarily reflect the view or policy of his/her/their employer(s), organization(s), WMU Publications, or the World Maritime University. WMU Publications and the Series Editors, while exercising the greatest care in this publication, do not hold themselves responsible for the consequences arising from any inaccuracies therein.

All rights reserved. Except for quotation of short passages for the purposes of criticism and review, no part of this publication may be reproduced without full attribution to the author(s) or the prior written permission of the Publisher.

ISBN: 978-91-986526-1-1
DOI: 10.21677/phd202010a

Published in Sweden in 2021 by

WMU PUBLICATIONS
PO Box 500
201 24 Malmö, Sweden

Suggested Citation:

Buxton-Barnor B (2021). *Development of an Overarching Transboundary Geospatial Framework: Selected Regimes in Perspective*. WMU Publications: Malmö, Sweden.

Abstract

Title of dissertation: **A Critical Assessment for the Development of an Overarching Trans-boundary Geospatial Framework: Selected Regimes in Perspective**

Degree: **Doctor of Philosophy (PhD) in Maritime Affairs**

In the maritime industry, a significant number of emerging and complex challenges occurring, has engaged limited attention and tenuous governance structures that can hardly deal with such complexities. Hence, the need for practitioners to seek innovative planning approaches for addressing such complexities, particularly the cumulative impacts on the marine environment. Such swelling effect, cannot be overemphasized in the Gulf of Guinea marine region which lies between Cape Lopez in Gabon and Cape Palmas in Liberia. This region, has a long history of conflicting marine uses and unresolved disputes. Prior to 2020, three adjacent nations in this region have engaged in a host of sovereign disputes and domestic conflicts as chronicled in Chapter One. Pressing challenges of this nature, necessitated an extensive interrogation of contemporary literature to help conceptualize and develop an overarching transboundary geospatial framework, capable of addressing such long-standing hurdles in the region. The proposed framework which was developed in light of the research analysis and empirical lessons, sought to address spatial development challenges pertaining to stakeholder engagement, joint agreements, political and legal support, financial, investment and fund management, planning complexities, data acquisition and plan implementation. Essentially, this analytical framework is postulated to maximize regional cooperation and promote peaceful co-existence, enhance coordination and prevent future overlapping entitlements, and protect and develop the environment to accelerate blue economic growth in the GoG marine region.

Keywords:

Transboundary marine spatial planning; joint development zones; cross-border agreements; zoning and mapping; integrated sea use planning and management; conflicts causation, effects and prospects; and geospatial framework.

Acknowledgements

It has been challenging over the years in my line of PhD, and as the Bible says in James 1: 2-4, it reads, “my brothers and sisters, count it all joy when you fall into various trials, knowing that the testing of your faith produces patience. But let patience have its perfect work, that you may be perfect and complete, lacking nothing”. As a Christian, I have learned to express gratitude in times of difficulties. Stressing gratitude, my warmest gratitude goes to the former Member of Ghana and Pan-African Parliament, Honourable Juliana Azumah Mensah for the confidence imposed in me and the opportunity bestowed to exhibit my potentials.

I solemnly thank each and every World Maritime University staff, faculty and board members who diligently assisted in every stage of my progress, and also appreciates the guidance and unflinching support by my supervisor, Dr Lawrence P. Hildebrand. Indeed, it’s been a pleasure working with him on this grand adventure. My profound gratitude once again goes to the former Director of Doctoral Programmes, Dr Olof Linden, and the current Director of Doctoral Programmes, Dr Maximo Mejia for their warmest support in times of challenges. I further thank the president of the University, Dr Cleopatra Dumbia-Henry, the former vice president in charge of academics, Dr Neil Bellefontaine, the vice president in charge of international affairs, Dr Shuo Ma, Head of Maritime Education and Training, Dr Michael Manuel and all the doctoral candidates for their encounter and vehement support.

To all the six (6) tiers of my primary data collection groups, ports and harbours, fisheries, shippers, petroleum, maritime authorities / commissions as well as the National Focal Points (NFP’s) in the Gulf of Guinea, for granting me a hearty welcome and shared with me their valuable time and information needed for this research. I am indeed grateful for their kind support and insightful data. I finally thank all my family and friends around the world who inspired me throughout the journey. I wish to conclude that the prestigious World Maritime University, has shaped my life and enhanced my academic potential and credentials. My gargantuan appreciation once again, World Maritime University.

Contents Summary

Abstract.....	v
Acknowledgements.....	vi
Contents summary.....	vii
Chapter summary.....	vii
Detailed chapter structure.....	viii
List of tables.....	xi
List of figures.....	xii
List of abbreviations.....	xiii

Chapter Summary

<i>Chapter 1</i> Rationale.....	1
<i>Chapter 2</i> Ocean governance structures	18
<i>Chapter 3</i> TMSP approaches and challenges	37
<i>Chapter 4</i> Pros and cons of TMSP practice.....	57
<i>Chapter 5</i> Underemphasized dimensions of TMSP.....	81
<i>Chapter 6</i> Discussion and reflections	93
<i>Chapter 7</i> Lessons and recommendations	112
<i>Chapter 8</i> Conclusions and implications	130
<i>APPENDIX 1</i> - Survey questions: including informed consent	138
<i>APPENDIX 2</i> – Bibliographic references	151

Detailed Chapter Structure

CHAPTER ONE - <i>Rationale</i>	
1.0. Overview	2
1.1. Common-interest conflict on the ultra-deep Keta east block between Ghana & Togo.....	2
1.2. Sovereign dispute on the maritime frontier between Ghana and Côte d’Ivoire	4
1.3. The sea-use conflict between the artisanal and industrial fishing vessels in Ghana.....	6
1.4. Context of study	8
1.5. Justifications for considering the TMSP concept as a research paradigm	9
1.6. Key motivational factors	11
1.7. Research aims	12
1.7.1. Objectives, research questions and summary of methodology used	12
1.8. Thesis structure and roadmap	14
1.9. Thesis scope and exemptions	16
1.10. Summary	17
CHAPTER TWO – <i>Ocean governance structures</i>	
2.0. Overview	19
2.1. The significance of maritime boundaries	19
2.2. The evolution of maritime boundaries in Ghana	20
2.2.1. Ghana’s declaration to the extent of maritime boundaries and zones	20
2.3. Ghana’s maritime boundaries beyond the outer limit of the Continental Shelf	22
2.4. Côte d’Ivoire’s maritime boundaries beyond the outer limit of the Continental Shelf... ..	23
2.4.1. Côte d’Ivoire’s declaration to the extent of maritime boundaries and zones	24
2.5. Contending claims by Ghana and Côte d’Ivoire about the extent of maritime frontier... ..	26
2.6. The judgment	27
2.6.1. Analysis of the ruling and technical concerns	29
2.6.2. Critical assessment of the ruling and subsequent development	30
2.7. The importance of joint agreements	31
2.8. The Nigeria - Sao Tomé and Príncipe joint agreement – example	32
2.8.1. Status quo and operationalization of the NSTPJDZ agreement	33
2.8.2. Critique on the NSTPJDZ arrangements	35
2.9. Summary	36
CHAPTER THREE - <i>TMSP approaches and challenges</i>	
3.0. Overview	38
3.1. The evolution of marine spatial planning	38
3.2. Geographic Information System (GIS) as a tool for eliciting MSP data	41
3.2.1. Collection of mapping information and identifying current incompatibilities	53
3.3. Projecting current and future trends in the management area	43
3.4. Critical assessment of unilateral and multilateral approaches to MSP	44
3.5. The practical challenges to TMSP as identified in this study	46
3.5.1. Challenge one: financial capacity	47
3.5.2. Challenge two: Fund management and enabling conditions for future investment	48
3.5.3. Challenge three: stakeholder engagement	49
3.5.4. Challenge four: achieving joint agreement	51

3.5.5. Challenge five: political and legal support	52
3.5.6. Challenge six: complexities in the planning process	52
3.5.7. Challenge seven: data acquisition and management	54
3.5.8. Challenge eight: plan implementation	55
3.6. Summary	55
 <i>CHAPTER FOUR – Pros and cons of TMSP practice</i>	
4.0. Overview	58
4.1. Data input strategy and analysis	58
4.2. Justifications for considering the PESTLE analytical tool	59
4.2.1. Technicalities in using the PESTLE for secondary analysis	60
4.3. Background and introduction to the North Pacific Coast	61
4.3.1. The North Pacific Coast regional planning and engagement strategies	63
4.4. Analysing the Marine Plan Partnership for the North Pacific Coast (MaPP)	65
4.5. Conclusion on the MaPP spatial process	70
4.6. Background and introduction to the Eastern Scotian Shelf	70
4.7. Analysing the Eastern Scotian Shelf Integrated Management Plan (ESSIM)	73
4.8. Conclusion on the ESSIM spatial process	78
4.9. Evaluation of the analysed regimes	79
4.10. Interpretation of the evaluation results	80
 <i>CHAPTER FIVE – Underemphasized dimensions of TMSP</i>	
5.0. Overview	82
5.1. Prejudice towards traditional and local knowledge	82
5.2. Mapping jurisdictional boundaries	84
5.3. The Role of an Oversight Advisory Council	85
5.4. Leveraging human and institutional capacity	85
5.5. Significance of contingency planning	86
5.6. Balancing spatial outcomes	89
5.7. Incorporating Transfer of Marine Technology	90
5.8. Emphasizing effective communication	91
5.9. Summary	92
 <i>CHAPTER SIX - Discussion and reflections</i>	
6.0. Overview	94
6.1. Justifications for the chosen design	94
6.2. Questionnaire design and development	95
6.2.1. The quantitative data input strategy	96
6.3. Empirical data and methodology	97
6.3.1. Evaluation of qualitative results using in vivo coding	98
6.4. Common-interest conflict between Ghana and Togo on the ultra-deep keta east block	99
6.5. The sea-use conflict between artisanal and industrial fishing vessels in Ghana	102
6.6. The sovereign dispute on the maritime frontier between Ghana and Côte d'Ivoire	104
6.7. Quantitative data interpretation and evaluation	107
6.8. Aggregation of quantitative and qualitative results	109
6.9. Summary	110

CHAPTER SEVEN - <i>Lessons and recommendations</i>	
7.0. Overview	113
7.1. Proposed framework for addressing fiscal constraints	113
7.2. Proposed framework for effective investment and fund management	114
7.3. Proposed framework for enhancing stakeholder engagement	117
7.4. Proposed framework for accomplishing effective joint agreement	119
7.5. Proposed framework for enhancing political and legal support	120
7.6. Proposed framework for managing complexities in the planning process	123
7.7. Proposed framework for mitigating data acquisition and management challenges	125
7.8. Proposed framework for averting implementation hurdles	126
7.9. Summary	128
CHAPTER EIGHT - <i>Conclusions and implications</i>	
8.0. Conclusions	131
8.1. Post-implementation principles for the utilization of the proposed frameworks.....	131
8.2. Significance and implications of the framework for the GoG region	133
8.3. Final remarks	133
8.4. Additional knowledge to literature and practice	134
8.5. Further research	135

List of Tables

Chapter 1

Table 1: <i>Research questions, objectives and summary of methods used</i>	12
Table 2: <i>Thesis scope</i>	16

Chapter 2

Table 3. <i>Geographic coordinates</i>	27
--	----

Chapter 3

Table 4: <i>Criteria for identifying biologically sensitive areas</i>	42
Table 5: <i>A compatibility matrix entailing human use conflicts</i>	43
Table 6: <i>Significant challenges to TMSP identified in this study</i>	47
Table 7: <i>A list of alternative financing mechanisms</i>	48
Table 8: <i>Major asset portfolios in the sphere of fund management</i>	49

Chapter 4

Table 9: <i>TMSP data selection and input criteria</i>	58
Table 10: <i>Goals and expectations of each sub-region in the North Pacific Coast</i>	64

Chapter 5

Table 11: <i>A checklist of the significant underemphasized dimensions of TMSP</i>	82
--	----

Chapter 6

Table 12: <i>A multiple variable quantitative Likert scale</i>	96
Table 13: <i>Quantitative data interpretation and evaluation</i>	107

Chapter 7

Table 14: <i>Synopsis of GoG's capacity to address fiscal constraints</i>	113
Table 15: <i>Synopsis of GoG's capacity to manage funds and investments</i>	114
Table 16: <i>Synopsis of GoG's capacity to enhance stakeholder engagement</i>	117
Table 17: <i>Synopsis of GoG's capacity to accomplish effective joint agreement</i>	119
Table 18: <i>Management framework or criteria for an effective joint agreement</i>	120
Table 19: <i>Synopsis of GoG's capacity to augment political and legal support</i>	120
Table 20: <i>Synopsis of GoG's capacity to manage planning complexities</i>	123
Table 21: <i>Specific roles, aptitudes and expertise of MSP practitioners</i>	124
Table 22: <i>Synopsis of GoG's capacity to mitigate data acquisition hurdles</i>	125
Table 23: <i>Synopsis of GoG's capacity to avert implementation hurdles</i>	126

List of Figures

<i>Figure 1: The ultra-deep Keta East block between Ghana and Togo</i>	3
<i>Figure 2: Côte d'Ivoire's differing claim lines from 2009 – 2011.....</i>	4
<i>Figure 3: Designated oil concession zones in the Western Region of Ghana</i>	7
<i>Figure 4: The French-Belgian TMSP in the North Sea</i>	10
<i>Figure 5: Continuous planning cycle and management approach to TMSP</i>	10
<i>Figure 6: Geographical scope of the Abidjan Convention</i>	12
<i>Figure 7: Thesis structure</i>	15
<i>Figure 8: Permitted zones and boundary line between Ghana & Cote d'Ivoire</i>	22
<i>Figure 9: The Western and the Eastern Regional foots of the continental slope</i>	23
<i>Figure 10: Fixed outer limit points of Côte d'Ivoire's eastern extended continental shelf</i>	24
<i>Figure 11: Permitted zones and boundary line between Côte d'Ivoire and Ghana</i>	26
<i>Figure 12: Approved single maritime boundary between Ghana and Côte d'Ivoire</i>	29
<i>Figure 13: Locational map of the NSTP joint development zone</i>	33
<i>Figure 14: The management organogram of the NSTPJDZ</i>	34
<i>Figure 15: Prevention of marine conflicts in the southern California</i>	39
<i>Figure 16: The ten steps to a successful marine spatial planning</i>	40
<i>Figure 17: Visual representation of integrated data products</i>	41
<i>Figure 18: Projected human and non-human uses</i>	44
<i>Figure 19: Key methodologies in transboundary marine spatial planning</i>	46
<i>Figure 20: Defining how to involve stakeholders.....</i>	51
<i>Figure 21: The methodological-framework</i>	59
<i>Figure 22: The PESTLE influential factors</i>	60
<i>Figure 23: Canada's Marine Plan Partnership (MaPP).....</i>	61
<i>Figure 24: MaPP governance structure</i>	63
<i>Figure 25: The systematic approach to monitoring and evaluation</i>	68
<i>Figure 26: The ESSIM Management Area</i>	71
<i>Figure 27: The ESSIM governance structure</i>	73
<i>Figure 28: Marine areas with high ecological values</i>	77
<i>Figure 29: Evaluating the performance of the analysed regimes</i>	79
<i>Figure 30: Evaluation results</i>	80
<i>Figure 31: Operational hazards in need of contingency plans</i>	87
<i>Figure 32: Abbreviations of the interviewees and their organizations</i>	97
<i>Figure 33: Qualitative results</i>	99
<i>Figure 34: Quantitative results</i>	109
<i>Figure 35: Spatial fund allocation</i>	115
<i>Figure 36: The investment strategies in TMSP: A continuum</i>	116
<i>Figure 37: The stakeholder engagement hierarchy</i>	118
<i>Figure 38: The ocean governance structure in the GoG region</i>	122
<i>Figure 39: Post TMSP implementation principles</i>	132

Abbreviations

ADR – Alternative Dispute Resolution
AMC – Advisory Ministerial Council
AMD – African Maritime Domain
AMP – Asset Management Plan
ATON – Aids to Navigation
AU – African Union
AUBP – African Union Border Programme
AUCIMSAA - African Union Commission Integrated Maritime Strategy Aim and Agenda
BEC – Blue Economy Cell
BP – Boundary Pillar
bpd – Barrels per Day
BSIMP – Beaufort Sea Integrated Management Plan
BVM – Bio-Valuation Mapping
CAPP – Canadian Association of Petroleum Producers
CEP – Causes Effects and Prospects
CFN – Coastal First Nations
CGTMT – Criteria and Guidelines on Transfer of Marine Technology
CI – Côte d’Ivoire
CLCS – Commission on the Limits of the Continental Shelf
CNSOPB – Canada-Nova Scotia Offshore Petroleum Board
COP – Conference of Parties
CS – Continental Shelf
CZ – Contiguous Zone
DEFRA – Department for Environment, Food and Rural Affairs
DFO – Department of Fisheries and Ocean
DG Mare – Directorate-General for Maritime Affairs and Fisheries
EC – European Commission
ECOWAS – Economic Community of West African States
EEZ – Exclusive Economic Zone
EGTC – European Grouping for Territorial Cooperation
EIA – Environmental Impact Assessment
EMFF – European Maritime and Fisheries Fund
EPA – Environmental Protection Agency
EPC – Economic Planning Commission
ESSIM – Eastern Scotian Shelf Integrated Management
EU – European Union
FAA – Fisheries and Aquaculture
FAO – Food and Agriculture Organization
FLNRO – Forests Lands and Natural Resource Operations
FOS – Foot of the Continental Slope
GBC – Ghana Boundary Commission
GBRA – Great Bear Rainforest Agreement
GBRMP – Great Barrier Reef Marine Park
GDP – Gross Domestic Product
GEF – Global Environment Facility
GHA – Ghana

GIS – Geographic Information System
 GMA – Ghana Maritime Authority
 GNPC – Ghana National Petroleum Cooperation
 GoG – Gulf of Guinea
 GOSLIM – Gulf of St. Lawrence Integrated Management
 GTV – Ghana Television
 GW – Gigawatts
 HELCOM – Helsinki Commission
 ICJ – International Court of Justice
 ICZM – Integrated Coastal Zone Management
 IGF – Internally Generated Funds
 IMF – International Monetary Fund
 IMO – International Maritime Organization
 IMSF – Institute of Marine Sciences and Fisheries
 IOC – Intergovernmental Oceanographic Commission
 ITLOS – International Tribunal for the Law of the Sea
 IUU – Illegal Unregulated and Unreported
 JDA – Joint Development Authority
 JDZ – Joint Development Zone
 JDZII – Joint Development Zone Investment International
 JMC – Joint Ministerial Council
 LBSA – Land Base Sources and Activities
 LBT – Land Boundary Terminus
 LOMA – Large Ocean Marine Area
 LOS – Law of the Sea
 LRMPs – Large Regional Marine Plans
 LUSPA – Land Use and Spatial Planning Agency
 MANOVA – Multivariate Analysis of Variance
 MaPP – Marine Plan Partnership for the North Pacific
 MBD – Maritime Boundary Delimitation
 MBPs – Marine Bioregional Plans
 MDG's – Millennium Development Goals
 MF – Ministerial Forum
 MoU – Memorandum of Understanding
 MPAs – Marine Protected Areas
 MSFD – Marine Strategy Framework Directive
 MSP – Marine Spatial Planning
 NCEAS – National Centre for Ecological Analysis and Synthesis
 NCSFNSS – North Coast-Skeena FN Stewardship Society
 NFP – National Focal Points
 NGDC – National Geophysical Data Centre
 NGOs – Non Governmental Organizations
 NOAA – National Oceanic and Atmospheric Administration
 NPC – North Pacific Coast
 NRCD – National Redemption Council Decree
 NSIMP – North Sea Integrated Master Plan
 NSRAC – North Sea Regional Advisory Council
 NSTP – Nigeria - Sao Tomé and Príncipe
 OAC – Oversight Advisory Council

OAG – Oil and Gas
 OL – Outer Limits
 OPRC – Oil Pollution Preparedness Response and Cooperation
 OSPAR – Oslo Paris Convention
 PBGB – Placentia Bay and the Grand Banks
 PESTLE – Political Economic Social Technological Legal and Environmental
 PIs – Performance Indicators
 PMA – Ports and Maritime Agencies
 PNCIMA – Pacific North Coast Integrated Management Area
 PNDCL – Provisional National Defense Council Law
 RAF – Regional Action Framework
 RCU – Regional Coordinating Unit
 RMA – Regional Maritime Authorities
 RMPs – Regional Marine Plans
 ROCOM – Regional Oversight Committee on Ocean Management
 ROV – Remote Operated Vehicle
 SAC – Stakeholder Advisory Council
 SEA – Strategic Environmental Assessment
 SDG – Sustainable Development Goals
 SDS – Standard Development Sector
 SED – Science and Exploration Directorate
 SMCD – Supreme Military Council Decree
 SOLAS - Safety of Life at Sea
 SPV – Special Purpose Vehicle
 SPA - Strategic Partnership Agreement
 SPSS – Statistical Package for the Social Sciences
 SWOT – Strength Weaknesses Opportunities and Threats
 TGC – Transboundary Geospatial Criteria
 TMSP – Transboundary Marine Spatial Planning
 TMT – Transfer of Marine Technology
 TS – Territorial Sea
 TWMZ – Territorial Waters and Maritime Zones
 UN – United Nations
 UNCED – United Nation Conference on Environment and Development
 UNCLOS – United Nations Convention on the Law of the Sea
 UN-DESA – United Nations Department of Economic and Social Affairs
 UNEP – United Nations Environment Programme
 UNESCO – United Nations Educational, Scientific and Cultural Organization
 USAID – United States Agency for International Development
 WCS – Wildlife Conservation Society
 WGS – World Geodetic System
 WHC – World Heritage Committee
 WMSP – Waste Management System Plan (various states)
 WPPA – World Population Plan of Action
 WRSDF – Western Region Spatial Development Framework

Chapter One – Rationale

1.0. Overview

This research focuses on the process of conceptualizing and developing a literature-based transboundary geospatial framework for mitigating or preventing the upsurge of sea-use conflicts in Ghana, Côte d'Ivoire and Benin. It further seeks to explore and understand how the case study domain tries to control the menace while recognizing the adverse implications. As an introduction to the issues deliberated upon in the subsequent chapters, Chapter 1 presents three common maritime-based conflicts and disputes identified in the case study domain based on official reports and academic literature. The chapter further provides an explicit view of the contributory factors and the drawbacks of maritime-based conflicts. It also provides an extensive justification for considering the Transboundary Marine Spatial Planning (TMSP) concept as a research paradigm and presents a series of motivational factors for choosing the concept. The concluding part of the chapter uses the research aim and objectives to briefly explain the methods used, and finally describes the structural orientation of the study in-line with the eight sequential chapters. Focusing on the social dynamics in maritime conflicts, one of the most critical banes of coastal States, policy actors and ocean users, is the cyclical nature of such conflicts. Recent development in controlling such a menace in particular, has resulted in providing substantial solutions for preventive purposes not only at the unilateral level, hence the need to address a number of incompatible issues at the multilateral level (Cicin-Sain, 2003). According to Crowder and Norse (2008), the presence of maritime-based conflicts and the absence of maritime boundary delimitation, often result in overlapping jurisdictional entitlements, and such phenomenon, are the influential factors in a host of maritime-based conflicts. The preceding argument maintains the position that pragmatic solutions can provide the needed leverage for coastal States, at both the unilateral and multilateral level. Following are narratives of three types of maritime-based conflicts that serve to illustrate some of the drawbacks for policy actors, ocean users and civil society. *In contrast, the fifth chapter identified a host of underemphasized dimensions of transboundary marine spatial planning. In a bid to demonstrate the sources of the derived underemphasized dimensions, the fourth chapter and divers sections of the preceding chapters, highlights the derived sources.*

1.1. Common-interest conflict on the ultra-deep keta east block between Ghana & Togo

In 2016, the Ghanaian government, through a contractual agreement, awarded the ultra-deep Keta East block for a concession to a joint venture Blue Star Exploration, State-owned oil firm, Ghana National Petroleum Cooperation (GNPC), and Heritage E & P. In December 2017 to May 2018, the people's republic of Togo and its Navy unexpectedly halted the activities of two seismic vessels from Ghana which were acquiring seismic data in the deep-sea area between the borders of Ghana and Togo. Although Ghana has, over the years, maintained ownership of that area, which is believed to hold oil and gas in commercial quantities, Togo alleges that it does not recognize its continental shelf close to the East Keta basin belonging to its neighbouring State Ghana. Further, Togo demands the authorities of Ghana to meet for a tacit agreement. Following five consecutive attempts to reach a bilateral consensus, the talks proved futile. On 22 August 2019, the Parties ultimately agreed to establish a Land Boundary Terminus at Boundary Pillar 1 close to the East Keta basin (africafeeds.com, 2019; & allafrica.com, 2019). On the 19th March 2010, the Ghana Boundary Commission Act, Act 795, was passed by Parliament under a certificate of urgency that Ghana had not seen in over 53 years of independence. However, the Act makes no provision to settle its maritime frontiers with any of its coastal neighbours. Being signatory to the United Nations Convention on the

Law of the Sea (UNCLOS), both Ghana and Togo have sovereign rights over their adjoining sea. The maritime boundary determines the area (sea water, seabed, ocean floor and subsoil) over which both countries can freely exercise their sovereign rights including over marine resources without interference from another State. In essence, the disputing parties have total jurisdiction over what is called the Territorial Sea (TS) measured 12 nautical miles (M) from the baseline into the sea. The territorial sea is adjoined by the Contiguous Zone (CZ) which is measured 24 nautical miles from the baselines from which the breadth of the territorial sea is measured, in addition to the Exclusive Economic Zone (EEZ) which is measured 200 nautical miles from the baselines from which the breadth of the territorial sea is measured. The seabed and subsoil of the area covered by the exclusive economic zone is what is referred to as the Continental Shelf (CS) (ITLOS, 2019).

Figure 1: The ultra-deep Keta East block between Ghana and Togo. *Source: Appianing Addo et al. (2012).*

The disputing Parties may further exercise over their Continental Shelf economic rights for the purpose of exploring and exploiting their natural resources. These rights are exclusive in the sense that if a coastal State does not explore the Continental Shelf or exploit its natural resources, no one may undertake these activities without the consent of the coastal State. The natural resources referred to, consist of the mineral and other non-living resources of the seabed and subsoil, together with living organisms belonging to sedentary species. Whereas a coastal State owns both the surface water area and the seabed of the territorial sea, it only enjoys sovereign rights over the sea bed and subsoil of the continental shelf. Even so, it is more prudent to enter into a Maritime Boundary Delimitation (MBD) or a Joint Development Zone (JDZ) agreement with the opposite or adjacent coastal neighbours. A coastal State's right of ownership over the Exclusive Economic Zone is therefore tenuous, until such agreements are reached (ITLOS, 2019). Further elaborations on JDZ and MBD agreements in this management

area are extensively discussed in Chapter 2. Additionally, the EEZ is recognized as international jurisdiction and other States can carry out some economic activities under the Convention alongside the coastal State having economic rights over the seabed or subsoil of the zone (CLCS, 2019). It is only where neighbouring States fail to agree on the extent of their continental shelf, that the International Tribunal for the Law of the Sea (ITLOS), or the International Court of Justice (ICJ) is petitioned to determine the boundaries between the States in accordance with Arts 38 of the ICJ statute or Arts 15, para 2, of the Statute of the Tribunal.

1.2. Sovereign dispute on the maritime frontier between Ghana and Côte d'Ivoire

On the 3rd day of December 2014, a report was confirmed that Ghana has filed a legal suit against her neighbouring State, Côte d'Ivoire, pursuant to Article 15 para 2 of the Statute of the Tribunal, under the United Nations Convention on the Law of the Sea, by way of special agreement concluded between the disputing parties. This follows 10 rounds of unsuccessful negotiations at reaching a bilateral agreement between Ghana and Côte d'Ivoire on the extent of each side's claim (Annan, 2014; Harrould-Kolieb & Kolieb, 2014).

Figure 2: Côte d'Ivoire's differing claim lines from 2009 – 2011. Prepared by International Mapping for purposes of illustration only, without prejudice to the merit. Source: (ITLOS, 2017).

Emphasizing that Ghana and Côte d'Ivoire's maritime boundary dispute unravelled in 2009 when Côte d'Ivoire pronounced at the ECOWAS Ministerial meeting in Abuja that it disagrees with its maritime boundaries with Ghana and made further submissions to the United

Nations Commission on the Limits of the Continental Shelf (CLCS) in 2010 for a continental shelf extension. The area in dispute between the two countries is the subject of intense oil and gas exploration. Such interest, however, prompted the civil society groups in the region to criticize the disputing parties for their failure to settle their maritime boundary differences, as expected by the Convention, rather than pursuing an aggressive claim for mineral resources. The map below provides the boundary claim by both countries. One other factor Ghana seems to be relying upon is the belief that Côte d'Ivoire has, since 1977, respected that equidistance boundary. For this reason, oil firms within that enclave are expected to respect that traditional boundary. A similar argument was put forward by Nigeria in its dispute with Cameroon but was rejected flatly by the International Court of Justice, alleging that oil and gas activities of the States was not a factor to be taken into account in that particular case (ICJ, 2019). According to Harrould-Kolieb & Kolieb (2014), a decision against Ghana could be economically devastating, due to economic plans and ensuing budgets, compared to the effect a similar decision would have on Côte d'Ivoire. This case was entered as No. 23 among the list of cases at the Tribunal. The Request for provisional measures was submitted to the Special Chamber by Côte d'Ivoire on 27th February 2015. During the public hearing on 29th to 30th March 2015, Côte d'Ivoire requested the Special Chamber to prescribe provisional measures for Ghana to:

- take all steps to suspend all ongoing oil exploration and exploitation operations in the disputed area;
- refrain from granting any new permit for oil exploration and exploitation in the disputed area;
- take all steps necessary to prevent information resulting from past, ongoing or future exploration activities conducted by Ghana, or with its authorization, in the disputed area, from being used in any way whatsoever to the detriment of Côte d'Ivoire;
- generally take all necessary steps to preserve the continental shelf, its superjacent waters and its subsoil; and
- desist and refrain from any unilateral action entailing a risk of prejudice to the rights of Côte d'Ivoire and any unilateral action that might lead to aggravating the dispute.

At the public hearing, Ghana requested the Special Chamber to deny Côte d'Ivoire's request for provisional measures. However, the provisions of the Order by the Special Chamber on 25th April 2015 are as follows:

(1) Unanimously,

Prescribes, pending the final decision, the following provisional measures under article 290, paragraph 1, of the Convention:

- (a) Ghana shall take all necessary steps to ensure that no new drilling, either by Ghana or under its control, takes place in the disputed area;
- (b) Ghana shall take all necessary steps to prevent information resulting from past, ongoing or future exploration activities conducted by Ghana, or with its authorization, in the disputed area that is not already in the public domain, from being used in any way whatsoever to the detriment of Côte d'Ivoire;
- (c) Ghana shall carry out strict and continuous monitoring of all activities undertaken by Ghana or with its authorization in the disputed area with a view to ensuring the prevention of serious harm to the marine environment;
- (d) The Parties shall take all necessary steps to prevent serious harm to the marine environment, including the continental shelf and its superjacent waters, in the disputed area and shall cooperate to that end;
- (e) The Parties shall pursue cooperation and refrain from any unilateral action that might lead to aggravating the dispute.

(2) Unanimously,

Decides that Ghana and Côte d'Ivoire shall each submit to the Special Chamber the initial report referred to in paragraph 105 not later than 25 May 2015, and authorizes the President of the Special Chamber, after that date, to request such information from the Parties as he may consider appropriate after that date.

- (3) Unanimously, Decides that each Party shall bear its own costs.

Aftermath of ITLOS provisional measures - the drawbacks: The ITLOS provisional measures prescribed in the first paragraph states that “Ghana shall take all necessary steps to ensure that no new drilling, either by Ghana or under its control, takes place in the disputed area.” Noting the significance of such provisional measures, the preceding implications accounted for a “resource movement effect” in Ghana. This challenge occurred when there was a fall in oil production capacity from 120,000 to 80,000 Barrels per Day (bpd) affecting Ghana’s Gross Domestic Product (GDP) by 4 per cent between 2011 to 2017 fiscal years. Investor confidence sharply declined based on a marginal degree of uncertainty, with Tullow oil for instance, holding off its new drillings, consequently affecting employment and labour, and dwindling the economic fortunes of the country. Then came an “exchange rate effect”. At this point, the minimal quantity of oil production impacted negatively on exports, which adversely affected the value of Ghana’s local currency. Oil prices were hiked based on an excessive demand for imports with indigenous oil firms within the value chain folding up. This is what is referred to as the Dutch disease (www.ghanaweb.com, 2019; and www.undp.org/Africa, 2019).

1.3. The sea-use conflict between the artisanal and industrial fishing vessels in Ghana

In Ghana, the fishing industry, has over the years, been operating with canoes and boats alternatively known as the artisanal fishing, giving rise from five thousand canoes in 1990 to fifteen thousand in 2019, increasing pressures, competitiveness and conflicts in the marine environment. This growing number of fishing canoes provided the enabling environment for many illegal practices, such as dynamite and light-fishing. The situation as a result, witnessed a significant decrease in fish stocks from 1990 to 2019 affecting the supply of fish (fishcomghana.com, 2019). In the midst of these challenges, the advent of seventy five licensed “bottom trawling” fishing vessels mostly from China, Spain, France and the United States, were introduced into the country, illegally plying their trade within the 12 nautical mile zone earmarked for artisanal fishers with an increasing number of vessel-canoes collisions amounting to 250 deaths per year in West-Africa (crc.uri.edu, 2019). Such operations as a result, prompted the regular artisanal fishers to file a case against the licensed vessel operators at the Cape Coast High Court in 2001, challenging their legitimacy in that business, particularly the transshipment aspect of fishing popularly known as the *Saiko* business which is depriving Ghana of revenue (approximately USD 50 million each year). In Ghana, *Saiko* is a popular phrase used for describing a good and useful fish. After three years of legal proceedings, judgment was delivered in favour of the artisanal fishers. Subsequent to the judgment, the industrial fishing vessels have purportedly been recalcitrant, flouting the fisheries law and the rights of the artisanal fishers escaping punitive measures, paving the way for a permanent conflict between the artisanal and the industrial fishing vessels (ejatlas.org, 2019). On the 18 day of June 2019, Ghana’s Fisheries Commission report indicates that this challenge was intensified when the Fisheries Minister announced a closed fishing season from 15 May to 15 June, with industrial fishing vessels still in operation within the permitted zones of the artisanal fishers, making room for widespread illegal, unregulated and unreported (IUU) fishing issues. Such operations,

consequently, triggered the artisanal fishers to announce their intention for non-observation of the closed fishing season in the ensuing years. These issues bring to the fore, the need for ocean zoning and management strategies. According to Agardy (2010); Young *et al.* (2007); Ritchie *et al.* (2010); and Chua (2013) ocean zoning allows us to establish a strategic framework for considering and accommodating all users. This technical mechanism further assists in preventing future overlapping entitlements by promoting law and order (Ritchie, 2011). To critically elaborate on the importance of ocean zoning and management strategies, Chapter Two discusses the ocean zoning arrangements in both Ghana and Côte d'Ivoire and their relevance to sea use-conflict prevention. A practical example of such management zones, are demonstrated in the Figure 3 below.

Figure 3. Designated oil concession zones in the Western Region of Ghana. *Source:* (NOAA, 2019).

Demographic characteristics of the study area as a drawback: The evidence in this chapter demonstrates that, maritime-based conflicts in these three countries intensified from 2012 to 2019. According to World Population Review (2019), in 2012, the combined population of Ghana, Côte d'Ivoire and Togo, was approximately 56.8 million; it shot up to 65.3 million in 2019, accounting for a 15 per cent increase in the space of 7 years. This huge increment could probably play a key role in overcrowding the marine environment and eventually paving the way for ocean users to compete for additional space. World Population Review (2019) predicts that in the next 35 years, the population of this sub-region will soar by another 75 per cent or more. This situation may eventually trigger economic downturns and accumulate social pressure causing undue burden for policy actors and the United Nations at large. The 2020 United Nations Department of Economic and Social Affairs (UN-DESA) report reveals that, since 1950, the global population rises 2 per cent each year. If sustained, the population of the world may double every 35 years. The report further projected that the global population is expected to hit 9.7 billion by 2050 as against 7.2 billion in 2018 (www.un.org, 2020). To control this cycle of high birth rate, UN-DESA may be expected to provide a Convention to strengthen the 1974 World Population Plan of Action and entreat State Parties to entrench the Statutes of the Convention in their respective legislations with specific

implementation time lines. In order to create a safer and better world for all, the proposed Convention must additionally gear towards the attainment of the 2030 Agenda for Sustainable Development and its relevant goals and targets. In conclusion, the research discussion in Chapter 6, shall draw on the propositions in the research, to assist in addressing the Gulf of Guinea sub-regional challenges identified in sections 1.1 through to 1.3.

1.4. Context of study

The need for satisfactory ocean governance, as demanded in the meeting of high standards for mitigating or preventing the cyclical nature of maritime-based conflicts, cannot be undermined (Cicin-Sain, 2003). Undoubtedly, such conflicts are inevitably part of our social setting and within the maritime fraternity, territorial-related conflicts are the most challenging ones, often leading to growing tension in international relations, possibly aggravating armed conflicts (Ibid). This challenge may probably be attributable to issues relating to litigation of oil concession blocks, increased competition for marine space – from fishing and oil and gas as demonstrated in the above list of problems in the GoG region. According to Bandura (2002), the catastrophic corporate and international scandals and transgressions of the last decade have caused actions of perpetrators to be scrutinized. Jordan (2009) claims that civil society usually suffers from these wrong-doings, regardless of how perpetrators justify their actions. In-line with the perspective of Maes (2008) and Cicin-Sain (2003), negative manifestations of a host of maritime-based conflicts include economic downturns, social deprivation, and political turmoil. This suggests that the intensity of the territorial issues to a number of coastal States is highly challenging, and extremely complicated to deal with.

Pursuant to Arts. 237, 117, 140 – 158 and annex VI, the Convention “establishes a regime for the seas and oceans to contribute to the realization of a just and equitable international economic order through making provision for the peaceful use of ocean space, the equitable and efficient management and utilization of its resources, and the study, protection and preservation of the marine environment”. On the basis of the foregoing, Art. 197 also stipulates that littoral 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. Art. 270 further adds that international cooperation for the development and transfer of marine technology shall be carried out, where feasible and appropriate, through existing bilateral, regional or multilateral programs, and also through expanded and new programs in order to facilitate marine scientific research, the transfer of marine technology, particularly in new fields, and appropriate international funding for ocean research and development. In this regard, Art. 242 section 1, concluded that, States and competent international organizations shall, in accordance with the principle of respect for sovereignty and jurisdiction and on the basis of mutual benefit, promote international cooperation in marine scientific research for peaceful purposes. For this reason this scientific research, seeks to explore and understand how the case study domain tries to control the menace, while recognizing the adverse implications, and further conceptualize and develop an overarching transboundary geospatial framework. This would not be a separate document, but rather a framework within the body of literature and analysis for mitigating or preventing the upsurge of maritime-based conflicts in the Gulf of Guinea marine region. UNESCO (2013) defines transboundary marine spatial planning as a proactive process of analysing and

allocating parts of marine spaces to multiple uses in order to achieve the political, economic, social, technological, legal and environmental objectives.

1.5. Justifications for considering the TMSP concept as a research paradigm

As prescribed in the preamble of the Convention, one important priority of the UN “is the desire to settle, in a spirit of mutual understanding and cooperation, all issues relating to the law of the sea; promoting peace, justice and progress for all peoples of the world”. In-line with this vision, Goal 16 of the 2030 Sustainable Development Goals (SDGs) also seeks to “promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.” Goal 14 further proposes to “conserve and sustainably use the oceans, seas and marine resources for sustainable development.” According to Poverty (2015), Sachs (2005), Haines and Cassels (2004), the climax of the Millennium Development Goals (MDGs), necessitated the 17 Sustainable Development Goals and these Goals were built on the basis of paragraph 54 of the United Nations Resolution A/RES/70/1 on 25/09/2015, and came into force on 1st January 2016. Poverty (2015), reiterated that these Goals were developed to assist 193 countries across the globe for the purpose of poverty reduction, addressing climate change and conflict prevention.

Stressing conflict prevention, since the enactment and codification of part XII and XIII of the Convention, the Convention has provided us with: i) a comprehensive legal basis for maritime zones / allocation of marine resources and spaces; and ii) the right to exploitation of natural resources and the duty to protect the marine environment (Arts. 237,193,192, 117 and 140-158). These legal underpinnings have over the years enhanced the concept of transboundary marine spatial planning to meet the political, economic, social, technological, legal and environmental objectives of the UN (McLeod and Leslie, 2009; Ehler and Douvere, 2009). For the past three decades, marine spatial planning was traditionally planned on a unilateral basis, without the consideration of transboundary approaches (Douvere *et al.*, 2007, pp. 182-191; Young *et al.*, 2007, pp. 22-27; Douvere, 2008, p. 764; Ehler and Douvere, 2009, pp. 18-19). In recent years, the concept of transboundary marine spatial planning has become an important subject and has assisted regimes such as the Canada’s Marine Plan Partnership for the North Pacific Coast (MaPP); the Bay of Bengal Sub-regional Transboundary Spatial Plan (Bangladesh and Myanmar); the Eastern Scotian Shelf Integrated Management (ESSIM); the French-Belgian Transboundary Marine Spatial Plan, Hassan *et al.* (2015), and others – to maximize cooperation, promote peaceful co-existence and avert future overlapping entitlements (Queffelec & Maes, 2015; Soininen, & Hassan, 2015). According to Hassan *et al.* (2015), the TMSP concept was, importantly, adopted to protect and develop the environment, prevent marine conflicts and enhance cooperation, augment coordination and encourage blue economic growth. Soininen, & Hassan (2015) reiterated that for the preceding two decades, the concept of transboundary marine spatial planning has further informed the designation and siting of ocean uses to ensure effective management of activities in the ocean, maintain and restore healthy ecosystems, allow the delivery of marine ecosystem services, and ensure sustainable economic and socio-economic benefits (See also Articles 237,193,192, 117, 140-150 of the Convention). Prevention is better than a cure. This implies that the cyclical nature of maritime-based conflicts in this consensus-based era, requires a transboundary marine spatial plan.

Figure 4. The French-Belgian TMSP in the North Sea. *Source:* (Queffelec & Maes, 2015).

Most importantly, an integrated, systematic and hierarchical approach to sustainable use is required to allow nations to address their ocean governance challenges simultaneously (Soininen, & Hassan, 2015). Karkkainen (2004) added that professional actors do assist in the crafting of a draft plan that enables more flexible standards and monitoring, with provisions for revision and adaptation when the actual conditions change. This process involves a number of stakeholders, with often hundreds of participants and a growing group of experts trained in environmental mediation and facilitation. This is often called the “new governance model” and further entails: 1), a goal-setting process sometimes called “visioning” 2), planning; 3), implementation; 4), monitoring; and 5), evaluation (Agardy, 2010; and Doherty & Butler, 2006). The figure below provides an illustration of the continuous cycle of planning and management.

Figure 5. Continuous planning cycle and management approach to TMSP. *Source:* (UNESCO, 2013).

Why the need for a TMSP framework in Ghana, Côte d'Ivoire and Benin? In accordance with the problem statement in sections 1.1 – 1.2.3., in the last seven years, issues relating to litigation of oil concession blocks, as well as an increased competition for marine space – from fishing, leisure and other activities – has increasingly bedevilled the prospects of the maritime industry in this management area. Transboundary marine spatial planning, as a proactive concept, has over the years, provided us with a broader scope of knowledge. However, despite the extensive wider research in this area, experts seemingly focus on outcomes and projections against the backdrop of applying contemporary methods of identifying the strengths and weaknesses of TMSP practices, its underemphasized dimensions and providing recommendations to curb the upsurge of maritime-based conflicts. This implies that the future and over-reliance on the TMSP concept might prove challenging, as the concept continues to lose focus on deriving new management tools for advancing TMSP research and addressing practical challenges of this nature (Jay *et al.* 2016). Such weakness, may also be attributable to the lack of desire for nations to synthesize and formulate schemes for averting the increasing number of conflicting marine uses bedevilling the fortunes of coastal States.

1.6. Key motivational factors

In 2016, the parliament of Ghana enacted a legislative instrument entitled “Land Use and Spatial Planning Act, to strengthen the 1986 Maritime Zones and Delimitation Act P.N.D.C.L 159. This law aims at developing the land and ocean through a decentralized planning system and regulating the national, regional, district and local spatial plans, taking into account the health and safety of human settlements and socio-economic conditions. The Republic of Côte d’Ivoire in 1961, additionally enacted Law No. 61-349 in-conjunction with 1977 Law No. 77-926, for Delimiting its Maritime Zones. The People’s Republic of Benin in 1976 also provided a Decree, No. 76-92, extending the territorial waters to 200 nautical miles. The tripartite development of these MSP-related laws, in addition to the 2019 Pointe Noire Protocol on Integrated Coastal Zone Management, (abidjanconvention.org, 2019), motivated the UN Environment Programme under the auspices of the Abidjan Convention, to support the trajectory by prioritizing this management area for a three-year MSP pilot program from 2018-2021, dubbed “Mami Wata” Pilot Project with Ghana’s Environmental Protection Agency (EPA) serving as the lead planning agency (UNEP-IOC, 2019 and mamiwataproject.org, 2019). According to IOC (2019), the spatial management process is spearheaded by the Abidjan Convention with funding of approximately €800,000 from the German Federal Ministry for the Environment, Nature Conservation, Construction and Nuclear Safety. According to the Abidjan Convention, the three countries were selected for the pilot program since they have enacted MSP related laws with ongoing forums. In the process of mapping jurisdictional boundaries, Ghana and Côte d’Ivoire further signed a strategic partnership agreement in October 2017, with a financial commitment of 40% by Ghana to the pilot program. Additionally in December 2016, the World Maritime University signed a Memorandum of Understanding (MOU) with the UN Environment Programme and Article 4 (a) of this MOU emphasized the importance of considering a research underpinning. According to Stevens and Aurand (2008), the commitment of academia, coupled with constant forums and training, has built the capacity for enhancing the effectiveness of a spatial management process. This implies that, irrespective of the standard and availability of a TMSP process, it might not reflect its quality as a result of a lack of academic research and scientific input.

Figure 6: Geographical scope of the Abidjan Convention. *Source:* <https://abidjanconvention.org>.

1.7. Aim of research

In light of the key motivational factors discussed in section 1.6, this doctoral study aims at conceptualizing and developing an overarching transboundary geospatial framework for preventing the upsurge of maritime-based conflicts, specifically in the Gulf of Guinea. The proposed framework is postulated to maximize regional cooperation and promote peaceful co-existence, enhance coordination and prevent future overlapping entitlements, and protect and develop the environment to accelerate blue economic growth. Although the case study in context underscores a limited geographic scope, as explained in section 1.6, the proposed framework can hopefully be applied by the entire Gulf of Guinea region in the future.

1.7.1. Study objectives, research questions and summary of methodology used

Table 1. Research questions, objectives and summary of methods used

Question one: What are the benefits and importance of TMSP?	
Objective 1	To identify the benefits and importance of TMSP and critically analyse contemporary literature to justify the adoption of the concept.

**Methods
used**

Beside the justifications provided in the consideration of the TMSP concept as a research paradigm in Chapter One, and its associated key motivational factors, the chapter in its broader perspective established a rationale behind the study by examining the case between Ghana and Côte d'Ivoire who disagreed to cooperate and finally resorted to the establishment of a transboundary marine spatial plan based on orders and judgments delivered by the Tribunal. Such justifications in essence, informed this study about the importance and benefits of transboundary marine spatial planning to maritime-based conflict prevention – helping to address objective one of the research.

Question two: What are the challenges confronting TMSP practice across settings?

Objective 2

To identify and address the significant challenges confronting TMSP practice across geographic settings.

**Methods
used**

To illustrate the supplemental insights or mechanisms capable of preventing maritime-based conflicts and contributing to the contemporary TMSP literature, Chapter 3 facilitated a broader discussion on the significant challenges confronting TMSP practice across settings. Such challenges were addressed with salient propositions and underpinning literature – helping to accomplish objective two of the study.

Question three: What are the strengths and weaknesses of TMSP practice?

Objective 3

To analyse TMSP regimes and uncover the strengths and weaknesses of global practice.

**Methods
used**

In Chapter 4, the analysis conducted on ESSIM and the MaPP management regimes, helped to uncover the strengths and weaknesses of TMSP practices as envisaged. Following the analysis an evaluation was conducted to ascertain the accurate strengths and weaknesses which represented the secondary findings. The discussion in Chapter 7 subsequently takes account of the lessons learned, to unearth the eight proposed geospatial frameworks for the Gulf of Guinea marine region.

Question four: What underemphasized dimensions can be derived out of the TMSP literature?

Objective 4

To interrogate TMSP literature and uncover the underemphasized dimensions of TMSP.

**Methods
used**

The fourth chapter of this study analysed the strengths and weaknesses of TMSP regimes. The approach further assisted in uncovering eight underemphasized dimensions of TMSP. Three examples of these underemphasized dimensions include the significance of contingency planning, balancing spatial outcomes, and incorporating transfer of marine technology.

Question five: What framework can be derived to address the challenges in TMSP practice?

Objective 5

To develop eight proposed geospatial frameworks for the Gulf of Guinea marine region.

**Methods
used**

To uncover robust geospatial frameworks for the Gulf of Guinea marine region, Chapter 7 adopts a series of innovative approaches and propositions derived from the reviewed literature. The proposed frameworks, shall be delivered to the Regional Coordinating Unit of the Abidjan Convention and its National Focal Points for their consideration and hopeful adoption. This framework is postulated to influence policy, prevent sea-use conflicts and maximize regional cooperation, promote peaceful co-existence, enhance coordination and protect or develop the environment to accelerate blue economic growth

1.8. Thesis structure and roadmap

The structure of this thesis is in line with the stated research objectives and consists of eight (8) sequential chapters. Chapter 1 contains the study rationale; indicating the problem statement, aims and objectives, scope and structure. Chapter 2 interrogates the ocean governance arrangement in the study domain, by underscoring the importance of maritime boundary delimitation and joint agreements. Chapter 3 reviews the contemporary literature and addresses the identified challenges confronting TMSP practice. Chapter 4 analysed two case studies, to assist in identifying the strengths and weaknesses of TMSP practices. The analysis in Chapter 4 and divers sections of the preceding chapters further assisted in uncovering the underemphasized dimensions of TMSP in Chapter 5. Chapter 6 additionally discussed the findings in light of the research problems identified in Chapter One. Chapter 7 provides a series of geospatial frameworks to address the identified limitations in TMSP practice. The eight chapter concretely establishes the conclusions and implications of the study. See Figure 7 below for an explicit illustration of the roadmap.

1.9. Thesis scope and exemptions

In this study, research exemptions are classified as components that are consciously omitted in the research, and for that matter, reflects the parameters irrelevant to the application and interpretation of literature and data (Simon & Goes 2013). The following two components represent such exemptions.

Ocean zones: This study focuses on the joint development zone treaties and their relevance to transboundary marine spatial planning. The approach, in effect, assisted in enhancing the existing theoretical and practical knowledge on joint agreements. Stressing that the technicalities involved in the application of electronic navigation aids for zoning were exempted. This is due to the fact that ATON, or navigation aids, are used as a benchmark for managing vessel navigation, which will actually not help in addressing the study objectives.

Social ethics: In the context of environmental practice, social ethics is related to how maritime agencies and organizations create and maintain shared pattern of values, customs, traditions, beliefs and expectations which dominate normative behaviour in a particular domain (Attfield, 2011). This implies that the philosophy of social ethics is premised on the idea of addressing social challenges in accordance with ethical principles. This is considered central to living a meaningful and fulfilling life, and also creating a safer environment for all (Ibid). By doing so, practitioners of social ethics are expected to focus on addressing global challenges. As a result, the second chapter places emphasis on the ocean governance structure in Ghana and Côte d'Ivoire. This approach helped to explore and understand how the case study domain tries to control maritime-based conflicts, while recognizing its significant implications. Indeed, critical dimensions, such as ethical groups as well as other ethical elements and types, were not emphasized based on the focus of the study objectives.

Table 2: Thesis scope.

	<i>Thesis Scope</i>	<i>Exemptions</i>
Geographical Context	Gulf of Guinea Region	
Duration	Quadrennial	
Research paradigm	Transboundary Marine Spatial Planning	
Research Concepts	Ocean Zones	Electronic Navigation Aids
	Social Ethics	Types and Groups of Ethics
	Joint Treaties	Techniques in zoning

1.10. Summary

This chapter provides an introduction to the research, and further reveals, in sections 1.1 to 1.3, that in the last seven years, issues relating to litigation of oil concession blocks, increased competition for marine space from fishing – were the causes of sea-use mismatches in Ghana, Côte d’Ivoire and Togo. This implies that the over use of the marine environment and the absence of an extensive maritime zones and boundary delimitation are the contributory factors to a number of overlapping entitlements and jurisdictional uncertainties. In-line with the drawbacks identified in the problem statement, Section 1.2 emphasizes that subsequent to the provisional measures delivered by the Tribunal in April 2015, “there was a fall in oil production capacity from 120,000 to 80,000 Barrels per Day (bpd), affecting Ghana’s Gross Domestic Product (GDP) by 4 per cent, between 2011 and 2017 fiscal years. Investor confidence sharply declined based on a marginal degree of uncertainty, with Tullow oil, for instance, holding off its new drillings, consequently affecting employment and labour, and dwindling the economic fortunes of the country. Then came an “exchange rate effect.” At this point, the minimal quantity of oil production impacted negatively on exports, which adversely affected the value of Ghana’s local currency (the Cedi). Oil prices were hiked as a result of an excessive demand for imports, with indigenous oil firms within the value chain folding up”.

In light of the key motivational factors underscored in Section 1.6, the UN Environment Programme, under the auspices of the Abidjan Convention, in 2019 adopted a regional protocol on integrated coastal zone management to promote a three-year MSP pilot program for Ghana, Côte d’Ivoire and Benin to assist in preventing the continuous cycle of maritime-based conflicts in the GoG region. The pilot program, which has received much attention based on empirical observation, is currently in deficit of clear and measurable MSP goals and objectives which is recommended to be taken account of to avoid ensuing challenges. This follows an inclusion of Benin to the pilot program, with little or no cross-border agreements with Ghana and Côte d’Ivoire, bearing in mind the significant miles of interval between Ghana and Benin and its impact on transboundary marine spatial planning. The preceding argument critically probes the status quo of the regional integrated coastal zone management protocol and its ability to address issues relating to cross-border zones and its allied agreements. To derive additional mechanisms for mitigating such challenges, joint zones and boundary delimitation practices in Ghana and Côte d’Ivoire are interrogated as part of the second chapter, coupled with salient propositions to the challenges confronting transboundary marine spatial planning practices in Chapter 3. In spite of the justifications provided in the consideration of the TMSP concept as a research paradigm in Section 1.5., and the associated key motivational factors in Section 1.6., this chapter established a study rationale which assisted in interrogating the maritime boundary dispute between Ghana and Côte d’Ivoire who earlier disagreed to cooperate and eventually resorted to the establishment of a transboundary marine spatial plan based on Orders and judgments prescribed by the Tribunal as elaborated in Section 1.2. Such justifications, in essence, informed this study about the ultimate importance and benefits of transboundary marine spatial planning to maritime-based conflict prevention – helping to address objective one of the research. Yet, the primary question is referred to the late consideration of such a proactive mechanism, in an era currently driven by science and technology. Concretely, the supplemental importance and benefits of transboundary marine spatial planning derived in this study, are delivered as follows:

- Averts potential overlaps to rights and jurisdiction, and promotes peaceful coexistence;
- Ensures socioeconomic benefits and encourages investment by instilling predictability;
- Maximizes cooperation between sectors and creates synergy between each activity;
- Provides environmental conservation strategies and ensures multiple use of space;
- Augments coordination between administrations using a single instrument; and
- Overcomes the issue of fragmentation and ensures sustainable development.

Chapter Two – Ocean Governance Structures

2.0. Overview

Chapter one justifies the rationale behind this study by underscoring the importance and benefits of transboundary marine spatial planning to the GoG region. This chapter additionally interrogates the ocean governance arrangements in Ghana and Côte d'Ivoire to underscore the significance of maritime boundaries and joint agreements for the GoG region. By so doing, the study discusses a case between the two countries who earlier disagreed to cooperate on the extent of maritime claims and finally resorted to boundary delimitation and joint agreement following the 2017 ITLOS Judgment. In line with the literature interrogation, the study further took into consideration a case between Nigeria and Sao Tomé and Príncipe's Joint Development Zone Agreement (NSTPJDZ) which provided beneficial insights about the pros and cons in joint agreements.

2.1. Significance of maritime boundaries

Water does not respect boundaries (Backer and Frias, 2012, p.14). This implies that in the course of delimiting the maritime boundaries between adjacent States, it is essential to prioritize a number of mechanisms including the existing, expected and potential ocean users and rank them in accordance with your management goals in order to avoid future overlapping entitlements. Where marine conflicts may occur, your priorities may then be applied (Schofield, 2002). Prescott & Schofield (2005); and Evans (2006) emphasizes that maritime boundary delimitation, has the capacity of engaging legal, technical and geopolitical dimensions. Pursuant to Arts. 74 and 83 of the Convention, delimitation of an exclusive economic zone and continental shelves are to be affected by an international law as referred to in Art. 38 (1) of the Statute of the International Court of Justice. With the support of a legislative instrument, this approach further helps in building a formidable consensus through cultural and customary procedures (Roach, 2013). For the purpose of transparency, a cross-border consensus of this nature, must capitalize on better understanding of the benefits accruing from shared resources, Kimball (2001), and one example of such natural resource can be referred to the presence of oil and gas within the territorial waters of Sao Tomé and Príncipe and Nigeria. Pursuant to the Black Sea Case between Romania and Ukraine on the 3rd of February 2009, (ICJ Reports 61, para.116), the following three stages in territorial sea delimitation were considered central by the ICJ and followed in all subsequent international maritime delimitation cases: 1) draw a provisional median, or equidistance line; 2) consider if there is historic title; and 3) consider if there are special circumstances. To delimit the exclusive economic zones and continental shelves, Arts. 74 and 83 provides that: 1) draw a provisional equidistance line based on methods that are geometrically objective; 2) consider if there are special circumstances and make adjustments to reach an equitable solution, if needed; and 3) verify that the provisional equidistance line, whether or not adjusted, does not lead to an inequitable result by reason of any marked disparity between the ratio of respective coastal lengths and the ratio between the relevant maritime area of each State.

2.2. The evolution of maritime boundaries in Ghana

On the 2nd day of August 1986, the parliament of Ghana enacted the Maritime Zones (Delimitation) Law, (P.N.D.C.L 159) to repeal the 1973 Territorial Waters and Continental Shelf Decree (N.R.C.D. 165) as well as the 1977 Amendment Decree (S.M.C.D. 109). The Maritime Zones (Delimitation) Law, was notified in the *Gazette* on 22nd August, 1986. The Preamble to the Decree, reads: "WHEREAS the United Nations Conventions on the Law of the Sea referred to in this Act as "the Convention" was signed by the Government of Ghana on the 10th day of December, 1982 at Montego Bay in Jamaica; and whereas it is necessary to give effect to the provisions of the Convention relating to the delimitation of the territorial sea, contiguous zone, exclusive economic zone and the continental shelf in order that these provisions of the Convention shall have the force of the law in Ghana."

In seeking to mitigate the existing sea-use mismatches and advance the course of offshore operations in Ghana, the Ghana's Maritime Zones (Delimitation) Law, although robust and promising, have made little attempt in the prevention of maritime-based conflicts as demonstrated in the list of present and past conflicts outlined in Chapter One. An empirical evidence reveals that such a challenge is attributable to the limited number of management zones and lack of legal enforcement mechanisms leading to non-compliance to zoning regulations, making it challenging for the realization of smooth offshore operations in Ghana. Hence, the need for a robust compliance model to ensure stiff compliance and propagate the provisions enshrined in the preceding law. The following section in perspective, enumerates the indefinite declaration by Ghana on the extent of maritime boundaries and zones.

2.2.1. Ghana's declaration to the extent of maritime boundaries and zones

- (i) It is hereby declared that the breadth of the territorial sea of the Republic shall not exceed twelve nautical miles measured from the low waterline along the coast of the Republic, as marked on large-scale official charts.
- (ii) The outer limit of the territorial sea shall be the line every point of which is at a distance from the nearest point of the baseline equal to the breadth of the TS.
- (iii) The Republic exercises sovereignty over the territorial sea subject to the provisions of the Convention and any other rules of international law.
- (iv) The sovereignty of the Republic extends beyond its land territory and internal waters and to the airspace over the territorial sea as well as to its bed and subsoil.
- (v) The waters on the landward side of the baseline of the territorial sea form part of the internal waters of the Republic.
- (vi) The contiguous zone of the Republic is that zone contiguous to the territorial sea which may not extend beyond twenty-four nautical miles from the baselines from which the breadth of the territorial sea is measured.
- (vii) In the contiguous zone the Government may exercise the control necessary to, and,
 - (a) prevent infringement of its customs, fiscal, immigration laws and regulations,
 - (b) punish infringement of those laws and regulations if the infringement is committed within the territories of the Republic or the territorial sea.
- (viii) The exclusive economic zone of the Republic is that area beyond and adjacent to the territorial sea which does not extend beyond two hundred nautical miles from the baselines from which the breadth of the territorial sea is measured.
- (ix) In the exclusive economic zone the Republic has, to the extent permitted by international law, (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the

waters superjacent to the sea-bed and of the sea-bed and its subsoil, and with regard to any other activities for the economic exploration and exploitation of the zone, such as the production of energy from the water, currents and winds; *(b)* jurisdiction in accordance with the Convention with regard to the establishment and use of artificial islands, installations and structures, marine scientific research, and the protection and preservation of the marine environment; and *(c)* any other rights and duties that are provided for in the Convention.

- (x) The lines delimiting the outer limits of the exclusive economic zone shall be shown on official charts of a scale adequate for ascertaining their position.
- (xi) The continental shelf of the Republic comprises the sea-bed and subsoil of the submarine areas that extend beyond the territorial sea throughout the natural prolongation of its land territory to a distance of two hundred nautical miles from the baselines from which the breadth of the territorial sea is measured.
- (xii) The Government shall exercise over the continental shelf sovereign rights for the purpose of exploring the continental shelf and exploiting its natural resources.
- (xiii) The rights conferred therein, does not affect the legal status of the superjacent waters or of the airspace above those waters.
- (xiv) For the purposes of this section, the natural resources of the continental shelf consist of the mineral and any other non-living resources of the sea-bed and subsoil together with living organisms belonging to sedentary species which at the harvestable stage, are immobile on or under the sea-bed or are unable to move except in constant physical contact with the sea-bed or the subsoil.
- (xv) The lines delimiting the outer limits of the continental shelf shall be shown on official charts of a scale adequate for ascertaining their position.
- (xvi) The lines of delimitation of the TS, EEZ and CS as drawn on official charts are conclusive evidence of the limits of the territorial sea, exclusive economic zone and continental shelf as specified by sections 1, 5 and 6.
- (xvii) The President may, by legislation, make Regulations for giving effect to this Act.
- (xviii) Regulations made under subsection (1) may prescribe a penalty for an infringement of a regulation of a fine not exceeding three thousand penalty units or a term of imprisonment not exceeding fifteen years or both the fine and the imprisonment and may require the forfeiture of anything used in the commission of the offence.
- (xix) Where an offence under the Regulations is committed by a body of persons, *(a)* in the case of a body corporate, every director and officer of the body corporate shall be deemed to have committed that offence, and *(b)* in the case of a firm, every partner of the firm shall be deemed to have committed that offence.
- (xx) A person shall not be convicted of an offence by virtue of subsection (3) if it is proved that the act constituting the offence was committed by another person and without the knowledge or connivance of, and that due diligence was exercised by, the accused to prevent the commission of the offence having regard to the circumstances.

Fig 8. Permitted zones and boundary line between Ghana & Côte d'Ivoire. *Source:* goldstreetbusiness.com (2019).

2.3. Ghana's maritime boundaries beyond the outer limit of the Continental Shelf

Following the enactment and gazetting of the 1986 Ghana's Maritime Zones (Delimitation) Law on 28 April 2009, Ghana made a further submission to the Commission on the Limits of the Continental Shelf (CLCS), through the Secretary General of the United Nations for a continental shelf extension between two hundred, to two hundred and sixty nautical miles, from the baselines from which the breadth of the territorial sea is measured in accordance with Art. 76, para 8, of the Convention. This Article stipulates that "the Commission shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding". The submission therefore pertains to two separate regions: the 'Western Extended Continental Shelf Region' and the 'Eastern Extended Continental Shelf Region'. According to CLCS (2014), Ghana has overlapping maritime claims with its neighbouring States, Côte d'Ivoire and Togo and has never signed any maritime boundary delimitation treaty with either country prior to the submission. This can be described as a significant weakness within the ocean governance system in Ghana as such practice goes against the provisions in Arts. 74 and 83 of the Convention. The Commission in its prescription delivered its procedural modalities and decided that, as provided for in Arts. 5 of Annex II of the Convention in-line with rule 42 of the Rules of Procedure, the submission shall be considered through the establishment of a Sub-commission. On 28 February 2014, the sub-commission unanimously adopted its recommendations and submitted these recommendations to the commission for consideration and approval on 3 March 2014. The Commission then adopted its recommendations on 5 September 2014, taking into account the provisions enshrined in Art. 6 of Annex II of the Convention. These recommendations were provided in fulfilment of the mandates set forth in Art. 76 para 8, and Arts. 3 and 5 of Annex II to the Convention. In-line with the Recommendations, "the Commission considers that, both the Eastern and the Western Regions

of the continental shelf of Ghana, and its Foot of the Continental Slope (FOS) points as presented in the Figure below, fulfil the requirements of Arts. 76 and Chapter 5 of the Guidelines based on the consideration of the scientific documentation presented in the Submission, the addendum, and the additional data and information provided notably in the documents. The Commission recommends that the FOS points in the Figure below form the basis for the establishment of the outer edge of the continental margin of Ghana in the Western Region, as revised by Ghana, is established by straight lines connecting fixed points SED-GHA-7-Rev, OL-GHA-7 and OL-GHA-4. The outer edge of the continental margin of Ghana in the Eastern Region, as revised by Ghana, is established by straight lines connecting fixed points OL-GHA-5A, -1A, -2A, -3A, -6A and SED-GHA-6B.”

Fig 9. From left, the Western and right, the Eastern Regional foots of the continental slope. *Source:* (CLCS, 2014)

2.4. Côte d’Ivoire’s maritime boundaries beyond the outer limit of the Continental Shelf

- Pertaining to the submission made by Côte d’Ivoire to the Commission on the Limits of the Continental Shelf in 2014, the people’s republic of Côte d’Ivoire agreed that “as provided under paragraph 1 of Article 76 of the Convention, Côte d’Ivoire has a continental shelf, comprising the seabed and the subsoil of a submarine area that extends beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin. This extends up to the limits provided for in paragraphs 4 to 6 of Article 76 or, to a distance of 200 M from the territorial sea baselines of Côte d’Ivoire where the outer edge of the continental margin does not extend beyond that distance.
- Paragraphs 4 to 6 of Article 76 of the Convention elaborate provisions by which a coastal State may establish the outer edge of its continental margin, and its extended continental shelf, wherever that margin extends beyond 200 M measured from the territorial sea baselines.
- As set out in paragraph 7 of Article 76 of the Convention, a coastal State is to delineate the outer limits of the extended continental shelf by straight lines not

exceeding 60 M in length, connecting fixed points ('fixed points') defined by geographic coordinates of latitude and longitude.

- The data submitted by Côte d'Ivoire in support of the submission established that the outer edge of the continental margin appurtenant to the relevant land territory of Côte d'Ivoire extends beyond 200 M measured from the territorial sea baselines of Côte d'Ivoire in the region named in the submission as the 'Eastern Extended Continental Shelf Region'.

- In consonance with the extended continental shelf polygon, referred to in Côte d'Ivoire's submission as the Eastern Extended Continental Shelf Region, the Outer Limit of Côte d'Ivoire's Eastern Extended Continental Shelf Region is defined by six fixed points of which (Points OL-CI-1, OL-CI-2, OL-CI-3, OL-CI-4, and OL-CI-5) are points which are defined by the sediment thickness formula (Article 76. Paragraph 4 (a) (i). (Point OL-CI-6) is a point where the outer limit line intersects the line 200 M from Côte d'Ivoire's territorial sea baseline". Subsequent to the submission by Côte d'Ivoire to the Commission on the Limits of the Continental Shelf in 2014 for CS extension beyond 200 M, it was found that the fixed point OL-CI-1 for Côte d'Ivoire practically intersects with the fixed point OL-GHA-4 for Ghana, enabling the commission to await for the 2017 judgment by the International Tribunal for the Law of the Sea based on the overlapping entitlements by both countries.

Fig 10. The fixed outer limit points of Côte d'Ivoire's eastern extended continental shelf. *Source: CLCS (2019).*

2.4.1. Côte d'Ivoire's declaration to the extent of maritime boundaries and zones

In November 1977, the parliament of Côte d'Ivoire enacted the maritime zones and delimitation Law No. 77-926 to repeal the 1961 Law No. 61-349. Art. 1 of this law stipulates that the outer limit of the territorial sea of the republic of Côte d'Ivoire is established at a distance of 12 nautical miles from the lowest water mark. As concerns gulfs, bays, roadstead's,

estuaries and in general all cases in which the coast is deeply indented, decrees shall determine the straight baselines from which that breadth is measured. Regarding the two hundred nautical mile zone, for economic purposes, the republic of Côte d'Ivoire exercises jurisdiction over a maritime zone extending 200 nautical miles and called the exclusive economic zone. The breadth of this zone, lying outside the territorial sea and adjacent to it, is measured from the baseline used to measure the territorial sea (Art. 2). Within the zone described in the preceding Article, the Republic of Côte d'Ivoire exercises sovereign and exclusive rights as concerns:

- i) The exploration, exploitation, conservation, and management of natural living and non-living resources of the seabed, its subsoil, and superjacent waters;
- ii) Other activities involving the use of the said zone for economic purposes, including the production of energy from the water, currents, and winds;
- iii) The construction, establishment, and use of artificial islands, installations, and similar devices used for the purposes provided for by this Article, including related regulations on customs, tax, health, safety, and immigration matters. These rights shall be exercised in the terms and conditions laid down by Articles 4 and 5 hereof (Art. 3).

The pertinent provisions of Law No. 70-489 of August 3, 1970 establishing the Oil Code shall apply to the zone delimited in Article 2 above (Art. 4). Articles 129 and 130 of Law No. 61-349 of November 9, 1961, establishing the Merchant Marine Code to restrict fishing in territorial waters to Ivoirian vessels and, subject to reciprocity, to vessels of other States of equivalent recognized law, shall be applicable to the zone delimited in Article 2 above. Maritime fishing violations committed in such zones shall be punished in accordance with the provisions of the aforesaid Law of November 9, 1961, specifically Articles 126-130 and 212-225. However, only the fines stipulated in the said Articles may be imposed (Art 5). Throughout the zone delimited in Article 2 above, the Republic of Côte d'Ivoire also reserves the right to take any measures and to undertake any action to prevent, reduce, or control pollution of the marine environment, irrespective of the source. All scientific research activities conducted in the said zone shall be subject to the prior consent of the State, under the conditions established by decree (Art. 6). Art. 7 further provides that the sovereign rights exercised by the Republic of Côte d'Ivoire in the zone delimited in Article 2 above shall not impede the exercise by all coastal or non-coastal States of the freedoms of navigation, over flight, and laying of submarine cable and pipelines, or impede other uses of the sea related to navigation and communications which are recognized as legitimate by international Law. As enshrined in the miscellaneous provisions of the Law No. 77-926, Art. 8 stipulates that, with respect to adjoining coastal States, the territorial sea and zone referred to in Article 2 of this Law shall be delimited by agreement in conformity with equitable principles and using, if necessary the median line or the equidistance line, taking all pertinent factors into account. As necessary, decrees issued by the Council of Ministers shall specify the terms of application of this Law (Art. 9). All provisions contrary to this Law, particularly Decree No. 67-334 of August 1, 1967, are hereby rescinded (Art. 10). Art. 11 concludes that this Law shall be published in the Official Journal of the Republic of Côte d'Ivoire and enforced as State law. Pursuant to the 1961 Law No. 61-349, Art. 129 further stipulates that within the territorial waters, fishing is reserved to the nationals of Côte d'Ivoire and, subject to reciprocity, to the vessels of other States which grant the same rights. The aforementioned provisions will not hamper the freedom of navigation of foreign fishing vessels sailing or anchoring in the reserved fishing zone of Côte d'Ivoire's territorial waters. A Decree from the Minister will determine the special rules of police to which, whenever the case arises, the fishing vessels will have to abide (Art. 130).

Fig 11. Permitted zones and boundary line between Côte d'Ivoire and Ghana. *Source:* ITLOS (2019).

2.5. Contending claims by Ghana and Côte d'Ivoire about the extent of maritime frontier

In-line with the research problem stated in Section 1.2 regarding the “sovereign dispute on the maritime frontier between Ghana and Côte d'Ivoire,” the Special Chamber of the International Tribunal for the Law of the Sea on 23rd September 2017 delivered its judgment on this case pursuant to Arts. 23, 288 para 1 and 293 para 1 of the Convention based on the contentions raised by Ghana and Côte d'Ivoire. Further to the closure of the written proceedings, hearings on the merits of the case took place from 6 to 16 February 2017. In its final submissions, Ghana requests “the Special Chamber to adjudge and declare that:

- 1) Ghana and Côte d'Ivoire have mutually recognised, agreed, and applied an equidistance-based maritime boundary in the territorial sea, EEZ and continental shelf within 200 M.
- 2) The maritime boundary in the continental shelf beyond 200 M follows an extended equidistance boundary along the same azimuth as the boundary within 200 M, to the limit of national jurisdiction.
- 3) In accordance with international law, by reason of its representations and upon which Ghana has placed reliance, Côte d'Ivoire is estopped from objecting to the agreed maritime boundary.
- 4) The land boundary terminus and starting point for the agreed maritime boundary is at Boundary Pillar 55 (BP 55).
- 5) As per the Parties' agreement in December 2013, the geographic coordinates of BP 55 are 05° 05' 28.4" N and 03° 06' 21.8" W (in WGS 1984 datum).
- 6) Consequently, the maritime boundary between Ghana and Côte d'Ivoire in the Atlantic Ocean starts at BP 55, connects to the customary equidistance boundary mutually agreed by the Parties at the outer limit of the territorial sea, and then follows the agreed boundary to a distance of 200 M. Beyond 200 M, the boundary continues along the same azimuth to the limit of national jurisdiction. The boundary line connects the following points, using loxodromes (the geographic coordinates are in WGS 84 datum):
- 7) Côte d'Ivoire's claim alleging violation of the Special Chamber's Order of 25 April 2015 is rejected.

- 8) Côte d'Ivoire's claim alleging violation of Article 83 of the Convention and Côte d'Ivoire's sovereign rights is rejected."

Table 3: Geographic coordinates.

<i>Point</i>	<i>Latitude</i>	<i>Longitude</i>
<i>CEB - 1 (LBT)</i>	05° 05' 28.4" N	03° 06' 21.8" W
<i>CEB - 2</i>	04° 53' 39" N	03° 09' 18" W
<i>CEB - 3</i>	04° 47' 35" N	03° 10' 35" W
<i>CEB - 4</i>	04° 25' 54" N	03° 14' 53" W
<i>CEB - 5</i>	04° 04' 59" N	03° 19' 02" W
<i>CEB - 6</i>	03° 40' 13" N	03° 23' 51" W
<i>CEB - 7 (200M)</i>	01° 48' 30" N	03° 47' 18" W
<i>CEB - 8 (Limit of National Jurisdiction)</i>	01° 04' 43" N	03° 56' 29" W

In its final submissions, Côte d'Ivoire requests "the Special Chamber to reject all Ghana's requests and claims, and:

- 1) to declare and adjudge that the sole maritime boundary between Ghana and Côte d'Ivoire follows the 168.7° azimuth line, which starts at boundary pillar 55 and extends to the outer limit of the Ivorian continental shelf;
- 2) to declare and adjudge that the activities undertaken unilaterally by Ghana in the Ivorian maritime area constitute a violation of:
 - (i) the exclusive sovereign rights of Côte d'Ivoire over its continental shelf, as delimited by this Chamber;
 - (ii) the obligation to negotiate in good faith, pursuant to article 83, paragraph 1, of UNCLOS and customary law;
 - (iii) the obligation not to jeopardize or hamper the conclusion of an agreement, as provided for by article 83, paragraph 3, of the Convention; and
- 3) to declare and adjudge that Ghana has violated the provisional measures prescribed by this Chamber by its Order of 25 April 2015;
- 4) and consequently:
 - (a) to invite the Parties to carry out negotiations in order to reach agreement on the terms of the reparation due to Côte d'Ivoire, and
 - (b) to state that, if they fail to reach an agreement within a period of 6 months as from the date of the Judgment to be delivered by the Special Chamber, said Chamber will determine those terms of reparation on the basis of additional written documents dealing with this subject alone."

2.6. The judgment

In its Judgment on 23 September 2017, the Special Chamber decided as follows:

(1) Unanimously,

Finds that it has jurisdiction to delimit the maritime boundary between the Parties in the territorial sea, in the exclusive economic zone and on the continental shelf, both within and beyond 200 nm.

(2) Unanimously,

Finds that there is no tacit agreement between the Parties to delimit their territorial sea, exclusive economic zone and continental shelf both within and beyond 200 nm, and rejects

Ghana's claim that Côte d'Ivoire is estopped from objecting to the "customary equidistance boundary".

(3) Unanimously,

Decides that the single maritime boundary for the territorial sea, the exclusive economic zone and the continental shelf within and beyond 200 nm starts at BP 55+ with the coordinates 05° 05' 23.2" N, 03° 06' 21.2" W in WGS 84 as a geodetic datum and is defined by turning points A, B, C, D, E, F with the following coordinates and connected by geodetic lines:

A:	05° 01' 03.7" N	03° 07' 18.3" W
B:	04° 57' 58.9" N	03° 08' 01.4" W
C:	04° 26' 41.6" N	03° 14' 56.9" W
D:	03° 12' 13.4" N	03° 29' 54.3" W
E:	02° 59' 04.8" N	03° 32' 40.2" W
F:	02° 40' 36.4" N	03° 36' 36.4" W

From turning point F, the single maritime boundary continues as a geodetic line starting at an azimuth of 191° 38' 06.7" until it reaches the outer limits of the continental shelf.

(4) Unanimously,

Finds that it has jurisdiction to decide on the claim of Côte d'Ivoire against Ghana on the alleged international responsibility of Ghana.

(5) Unanimously,

Finds that Ghana did not violate the sovereign rights of Côte d'Ivoire.

(6) Unanimously,

Finds that Ghana did not violate article 83, paragraphs 1 and 3, of the Convention.

(7) Unanimously,

Finds that Ghana did not violate the provisional measures prescribed by the Special Chamber in its Order of 25 April 2015." The single maritime boundary is illustrated in the sketch map below, which is taken from the Judgment.

Figure 12. The approved single maritime boundary between Ghana and Côte d'Ivoire. Source: ITLOS (2019).

2.6.1. Analysis of the ruling and technical concerns

Following the judgment delivered by the Tribunal, the Special Chamber concluded on the delimitation of the maritime frontier between the two States, which led to both Parties assenting to the equidistance/relevant circumstances delimitation methodology employed by the Special Chamber to be used for the delimitation of all management zones thereafter. Given the historical and geographic characteristics of Ghana and Côte d'Ivoire, this conclusion leads to the feasibility of applying the equidistance method for the management of multiple zones in this management area. Bearing in mind that, the application of such method by the Special Chamber, took into consideration the potential overlaps and the base points from which the provisional equidistance lines were drawn with no requirement for adjustment and no marked concavity or convexity to the relevant coastlines, making it cumbersome to decipher its application for the management of multiple zones in the GoG region. The said methodology which additionally considers the location of hydrocarbon resources as extraneous, stem from

the delimitation method used for the 2009 Black Sea Case between Romania and Ukraine mentioned in section 2.1. (ICJ Reports 61, para.116).

Considering the decision of the Tribunal which led to an established equidistance boundary favouring the people's republic of Ghana, it was noted that the submissions made by Ghana and Côte d'Ivoire to the Tribunal prior to the Judgment, did not appropriately declare or address the customary agreed Boundary Pillar 55+ located close to Jomoro at the Western Region of Ghana within the legal provisions of both countries as observed in Sections 2.2.1 and 2.4.1. Indeed, such concern may practically be assumed to have appeared as an oversight to the Tribunal before and after the Judgment. Further to the declaration of Côte d'Ivoire's extent of maritime boundaries and zones as encapsulated in the miscellaneous provisions of Côte d'Ivoire's Law No. 77-926, "Art. 8 stipulates that, with respect to adjoining coastal States, the territorial sea and zone referred to in Art. 2 of this Law shall be delimited by agreement in conformity with equitable principles and using, if necessary the median line or the equidistance line, taking all pertinent factors into account". Subject to this legal provision, on 25 April 2015, the ITLOS Special Chamber prescribed provisional measures under Art. 290, para 1 of the Convention based on the contentions raised by Ghana and Côte d'Ivoire. The provisional measures prescribed in the fifth paragraph stressed that, (e) the Parties shall pursue cooperation and refrain from any unilateral action that might lead to aggravating the dispute (Section 1.2.). Keywords: Shall pursue cooperation. Emphasizing that per the power vested and the mandates set forth, the Tribunal in application of Arts. 197 and 242 of the Convention, could have stressed the significance of Art. 8 of Côte d'Ivoire's Law No. 77-926 in the provisional measures and Order the disputing Parties to carry out negotiations to reach a delimitation agreement 'using the median line or the equidistance line' and pursue cooperation to that end. Bearing in mind, Art. 197 provides that littoral 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. Art. 242 para. 1 concluded that, States and competent international organizations shall, in accordance with the principle of respect for sovereignty and jurisdiction and on the basis of mutual benefit, promote international cooperation in marine scientific research for peaceful purposes.

2.6.2. Critical assessment of the ruling and subsequent development

Following the provisions in the ITLOS ruling, it was explicit that there was no tacit agreement between the disputing Parties to delimit their territorial sea, exclusive economic zone and continental shelf both within and beyond 200 nautical miles. In essence, the customary equidistance boundary terminus Boundary Pillar 55+ has been accepted by both countries since 1957 as also witnessed in Art. 8 of Côte d'Ivoire's Law No. 77-926 as well as the submissions made by both countries to the Tribunal prior to the Judgment (see section 2.5,) of which it becomes practically questionable by Côte d'Ivoire's position for objecting to the customary equidistance boundary after sixty years of practice. Such customary boundary which has been in existence for well over sixty years, warranted the Tribunal to "decide that the single maritime boundary for the territorial sea, the exclusive economic zone and the continental shelf within and beyond 200 nm for both countries starts at BP 55+ and with the coordinates 05° 05' 23.2" N, 03° 06' 21.2" W in WGS 84 as a geodetic datum and is defined by turning points A, B, C, D, E, F with the following coordinates and connected by geodetic lines:

A:	05° 01' 03.7" N	03° 07' 18.3" W
B:	04° 57' 58.9" N	03° 08' 01.4" W
C:	04° 26' 41.6" N	03° 14' 56.9" W
D:	03° 12' 13.4" N	03° 29' 54.3" W
E:	02° 59' 04.8" N	03° 32' 40.2" W
F:	02° 40' 36.4" N	03° 36' 36.4" W

Further considering the recommendations filed by the Commission on the Limits of the Continental Shelf to Ghana on the continental shelf extension (Section 2.3), from turning point F, the single maritime boundary continues as a geodetic line starting at an azimuth of 191° 38' 06.7" until it reaches the outer limits of the continental shelf. This brings the understanding that the Tribunal in its ruling took into consideration the existing sixty-year customary equidistance boundary points in addition to the recommendations filed by CLCS in 2014 which candidly serve just for both countries based on the evidence in the memorial's and the rejoinder's submitted to the Tribunal. As also enshrined in the 2050 Africa's Integrated Maritime Strategy, part 'J' asserts that, "Member States shall be encouraged to claim their respective maritime limits, including their extended continental shelf where applicable. Member States are further urged to accept and fulfil all those responsibilities that emanate from the establishment of maritime zones as foreseen by UNCLOS and the IMO SOLAS Convention". Subsequent to the ruling in September 2017, in October 2017, this African Union Integrated Maritime Strategy Aim and Agenda was adhered to by the disputing Parties through a joint agreement christened as the Strategic Partnership Agreement (SPA). This draft agreement was signed to spearhead the implementation of the ITLOS ruling, and further develop policies for the exploitation and management of the offshore oil and gas, mining and other resources, thereby sharing information through research and development programs and capacity building. According to the Ghana Boundary Commission in 2019, following the strategic partnership agreement, a joint committee was set up in 2018 to ensure a smooth execution of the terms in the said agreement.

2.7. The importance of joint agreements

With reference to the debate conducted in sections 2.2 and 2.3., the literature emphasized that the republic of Ghana, since 1986, enacted her maritime zones (delimitation) law and extended the outer limits of her continental shelf in 2014 from two hundred to two hundred and sixty nautical miles. In reality, such initiative remains promising but prior to 2017, Ghana failed to utilize such pivotal initiative to address her overlapping maritime claims and enhance cooperation with her neighbouring States Côte d'Ivoire and Togo through joint agreements. Asserting that an earlier joint agreement between the three coastal States may have assisted in preventing the 2018 common-interest conflict on the ultra-deep east block between Ghana and Togo, as well as the 2015 sovereign dispute on the maritime frontier between Ghana and Côte d'Ivoire as discussed in Sections 1.1 and 1.2. Carleton and Schofield (2002) note that any joint agreement with legitimate underpinning can be described as satisfactory mechanism for transboundary cooperation as also encapsulated in Arts. 197 and 144-5 of the Convention. One such agreement rather appeared in October 2017 when Ghana entered into a strategic partnership agreement with Côte d'Ivoire to establish a joint commission for the implementation of the ITLOS ruling. As stated in Section 1.1., five consecutive attempts by Ghana to reach a similar agreement with Togo from December 2017 to May 2018 proved futile, as such agreement could have serve to facilitate cooperation and include Togo into the Mami

Wata MSP Pilot Program. Queffelec and Maes (2015) add that such agreements are flexible in nature and often do assist coastal States to explore resources in specific zones with mutual understanding, thereby preserving the existing maritime claims without prejudice to each side's claim, provides protection for biologically and ecologically sensitive areas, the ecosystem and its physical processes, protects natural values in the marine environment and minimizes the effects on nature and human uses, and preserves the marine environment in its natural state undisturbed by humans except for scientific research. According to Agardy (2010), joint agreements further overcome the issue of fragmentation and insufficiencies that plague management efforts. This implies that a strategic joint agreement holds promise for more effective cooperation and development. This argument is practically reflected in the case of Senegal and Guinea-Bissau regarding their joint agreement signed in Dakar on 14 October 1993 providing a protocol for the management and establishment of a cooperation agency to exploit and explore the natural resources of the area, as well as the Nigeria - Sao Tomé and Principe agreement on the joint development of petroleum and other resources, in respect of the areas of the exclusive economic zone of the two States signed in February 2001 (United Nations Document ST/LEG/SER.B/18, 452).

2.8. The Nigeria - Sao Tomé and Principe joint agreement – example

To learn from a contemporary experience of joint agreement of this nature, the Nigeria - Sao Tomé and Principe (NSTP) joint agreement was considered as a case study to help ascertain the specifics of the agreement, status quo, pros and cons and the successes chalked so far. Such contemporary experience is, however, believed to assist Ghana and Côte d'Ivoire to curtail possible future challenges and derive practical lessons for an enhanced performance in the near future. Groves (2005) emphasized that the Nigeria - Sao Tomé and Principe exclusive economic zone is an oil rich area of approximately 34,000 square kilometres in size with persistent overlapping claims, this area was agreed upon in November 1999 by the Heads of State through an official approval of a mandatory statement to commence negotiations on the existing overlapping claims. In August 2000, both Heads of State entered into an agreement to jointly exploit the petroleum and other resources in the area and constituted a preliminary discussion to formalize and ratify the treaty in February 2001 at Abuja, Nigeria. Such ratification became necessary since neither country could have explored the resources in the area without interfering with the maritime territory of the other country (Segura, 2006). The treaty was ratified in accordance with Art. 74 para 3 of the Convention which encourages disputing parties with territorial claims to enter into an agreement for the purpose of exploring and exploiting natural resources to the benefit of their citizenry. In Nigeria, this treaty was gazetted in March 2005 and it is cited as Federal Republic of Nigeria Official Gazette No. 14, Vol. 92 or Cap127, Vol.14 LFN 2004.

Figure 13. Locational map of the NSTP joint development zone. *Source:* (nstpjd.org, 2019).

Specific terms of reference in the agreement: In the agreement Art. 3(1) specifies that “within the zone, there shall be joint control by the States Parties of the exploration and exploitation of resources, aimed at achieving optimum commercial utilization”. The zone is defined by geographic co-ordinates and the State Parties shall share, in the proportions for Nigeria 60 per cent, Sao Tomé and Príncipe 40 per cent. All benefits and obligations arising from the development of activities shall be carried out in the zone in accordance with the treaty. The treaty shall last for 45 years with review after 30 years with no renunciation of claims to zone by both countries. The affairs of the zone shall be managed by a Joint Development Authority (JDA) that reports to a Joint Ministerial Council (JMC) which has an oversight responsibility of the resources in the area. The JDA office shall be located in Nigeria with a liaison office located in Sao Tomé and Príncipe. In relation to settlement of disputes, disputes between the Council and private entities, disputes arising in the work of the Council as well as unresolved disputes between the States Parties shall be agreed between the parties in dispute or subject to commercial arbitration pursuant to the terms of the relevant contractual agreement (Biang, 2010; and Groves, 2005).

2.8.1. Status quo and operationalization of the NSTPJDZ agreement

Further to the ratification of the NSTPJDZ treaty in January 2002, a Joint Development Authority in Nigeria, headed by a Liaison Office in Sao Tomé, was constituted for the management of the agreed zone, in 2018, eight Board Members forming a Joint Ministerial Council were inaugurated by both Heads of State, and at one part through a presidential Decree No. 14/2018 by the Democratic Republic of Sao Tomé and Príncipe. Subsequent to the inauguration of the Council, the Authority in its mandate reviewed the fiscal terms and other statutory documents / regulatory materials relating to the petroleum operations in the agreed zone in order to make the zone more attractive for investors. In tandem with this move, the Authority in 2012 strategically developed a Special Purpose Vehicle (SPV) christened as the

JDZ Investment International Limited (JDZII) to help outsource, capture and enter into any viable business venture on behalf of the Authority. Prior to this development, in 2003, the Authority was able to mobilize Four Million US Dollars as revenue for the State Parties and an additional One Hundred Million US Dollars for the licensing and award of the JDZ block 1. In 2004, the licensing and award of the JDZ block 2, 3 and 4 further generated an additional revenue of approximately Three Hundred Million US Dollars as a signature bonus. In accordance with the treaty, the monitoring and inspection department, has an oversight responsibility for the issuance and renewal of permits and licenses, inspection of operational sites, organisation of licensing rounds leading to the allocation of oil blocks, imposing fines and closing down non-compliance operations to ensure maximum compliance to the petroleum laws and regulations. Applicable regulations pursuant to the NSTPJDZ treaty include: The Petroleum Regulations 2003 (amended in 2015), the JDZ Local Content Policy; the Environmental Guidelines 2005 (amended and changed to Environmental Regulations in 2015); and Non-petroleum Activity and Tax Regulations 2012.

Figure 14. The management organogram of the NSTPJDZ (Derived in this research).

In accordance with the treaty, the Legal and Secretariat Unit, directly reports to the Joint Ministerial Council which has an oversight responsibility to assess matters relating to the Authority as well as the management progress thus far. With regards to transparency and accountability, the operations of the Authority are in full compliance with the provisions of the 2004 Abuja Declaration on Transparency and Accountability, signed by both countries to govern the joint zone. The Authority on the other hand, further ensures that its management members are trained from time to time, attending workshops, conferences and seminars at leading International Fora to assist in advancing the existing knowledge, skill and the expertise required in pursuit of excellence. As part of their corporate social responsibilities, a total of fifty-five projects, including the construction and renovation of schools, provision of ICT facilities and supply of equipment for science laboratories, were completed and commissioned in both countries amounting to Five Million US Dollars. Educational scholarships have also been awarded to two thousand four hundred deserving students from both countries of \$1,700,000 in funding. In the process of identifying the investment prospects, in 2008, the Authority organized a well-attended investment forum in Sao Tomé to help maximize investment potentials. In terms of security, the Authority further collaborates with State

agencies such as the Customs & Excise, Defense and Immigration as appropriate (See, <http://nstpjd.org/> 2019).

2.8.2. Critique on the NSTPJDZ arrangements

Following the status quo and operationalization of the NSTPJDZ agreement in section 2.8.1., it became evident that cross-border cooperation, capacity building and the enhancement of blue economic growth of both countries was in ascendancy. In consolidating this effort, the Executive Council of the African Union in 2010 correspondingly established the African Union Border Programme (AUBP) to enhance peaceful co-existence and facilitate cooperation in the African continent in light on Resolution AHG/Res.16 (1) and Resolution CM/Res.1069 (XLIV) as well as Article 4 (b) of the AU Constitution. According to the commissioner of AUBP in 2017, “this programme has made significant progress since 2007 in the sphere of boundary delimitation, regional cooperation and capacity building”. In pursuit of robust integrated management measures for the African Regional Economic Communities, this study observes that the current state of the NSTPJDZ agreement has been a supplemental tool for the attainment of the needed results. Noted as an important exercise for both Nigeria and Sao Tomé, the joint agreement process thence engaged conscious effort through additional mechanisms to side-step significant trade-offs. This demonstrates that the outlook of the NSTPJDZ agreement, remains optimistic, thus far, its success also hinges on explicit objectives with stipulated timelines for the attainment of another future vision. Such objectives when accomplished, should seek to overcome the uncertainty that may hinder operationalization effort and further attain the resilient and sustainable regime with the capacity of enhancing regional cooperation and accelerating inter-jurisdictional development. This ultimately suggests that the auspicious NSTPJDZ agreement which gained its ratification in accordance with Art. 74 para 3 of the Convention, is capable of reaching the expectations of the African regional economic communities in place of explicit objectives. As expressed in detail, the following enumerates a myriad of pros and cons identified in the NSTPJDZ arrangements.

- Significant strengths and opportunities in the NSTPJDZ arrangements

In sections 2.7 - 2.8.2., the discussion noted some significant strengths and opportunities in the NSTPJDZ arrangements and such opportunities revealed that:

- i) By entering into the NSTPJDZ treaty, Sao Tomé and Principe and Nigeria have managed to avert an ominous boundary dispute with far-reaching implications for regional security and stability;
- ii) In fulfilment of the 2004 Abuja Declaration on Transparency and Accountability, the Joint Development Authority in its core mandates also exhibited a trailblazing quality in pursuit of transparency and accountability by ensuring the posting of its revenue earnings on the internet as soon as they are received;
- iii) Such opportunities in-turn, have assisted in boosting the financial capacities of both countries to award educational scholarships, deliver social projects, and build capacity among indigenous contractors to enable them participate in the procurement process, engineering and construction works, fabrication and other value-chain process.

- Significant lapses and gaps in the NSTPJDZ arrangements

Following the above discourse, sections 2.7 - 2.8.2 critically deduced some significant lapses and gaps in the NSTPJDZ arrangements and these include:

- i) The importance of aligning specific objectives with stipulated timelines for the attainment of projected outcomes;
- ii) Lack of additional mechanisms to side-step significant trade-offs in the near future;
- iii) The lack of marine scientific research to help balance development in the area; and
- iv) Minimal preservation of the marine environment and disaster prevention strategies.

2.9. Summary

Chapter Two covered some long-standing discussions about the importance of maritime boundaries and joint development zones to assist in developing the essential jurisdictional frameworks for the GoG region. Despite the overriding nature of reactive mechanisms such as judgment's and Order's by the Tribunal, a host of proactive mechanisms deliberated upon in this chapter, have provided further theoretical and practical perspective about the significance of maritime boundaries and joint agreements as pragmatic approaches to conflict prevention. This implies that both reactive and proactive management approaches are necessary in our social setting, hence they equally serve to achieve the same purpose by curtailing sovereign disputes and common interest conflicts in the maritime domain. According to Cicin-Sain (1992), maritime boundaries and joint agreements can be described as proactive management strategies since such approaches help in preventing conflicts in advance. These approaches further entail planning and goal setting for marine regions e.g., how the area should look like in 5 to 100 years, determining future prospects for the area and deciding on a mix of appropriate uses, both actual and potential. Crowder *et al.* (2006) advises that in the process of preventing sea-use conflicts, the most important steps to take in the proactive approach is to consider a well set-out legislation, strong and measurable objectives, comprehensive joint development zone, principles indicating clear driving priorities, and strong stakeholder engagement. In the United States for instance, some patterns of proactive strategies mentioned above have been implemented throughout the federal State, and other patterns have also been adopted by individual States (Crowder *et al.* 2006). This means that the proactive strategy is developed in many ways and relevant measures vary from one State to the other depending on the impending goal.

In the process of identifying additional theories to assist in the function of the academic, professional and non-professional actors, this chapter serves, not only to interrogate the existing theories per se, but to decipher the evolution of maritime boundaries in Ghana and Côte d'Ivoire, and critically assess the ruling of the Tribunal, and subsequent development. In conducting such assessment to derive practical solutions for the study domain, the status quo of Sao Tomé and Príncipe and Nigeria's joint development agreement was equally taken into account. Further critique revealed the strength of ocean governance structures in the study domain as well as the weaknesses in the management trend. According to Webster and Watson (2002), an effective review ultimately seeks to advance the existing knowledge by addressing the identified lapses and gaps through meaningful interpretation of the literature. Concretely, the third chapter additionally facilitates a broader discussion on the significant challenges confronting TMSP practices across settings. This approach serves to illustrate the supplemental mechanisms capable of preventing maritime-based conflicts and advancing the existing knowledge. Also noting that the tools employed in the practice of joint zones and boundary delimitation are considered germane to transboundary marine spatial planning due to their ability to enhance cross-border cooperation (Agardy, 2010; and Evans, 2006). Queffelec & Maes (2015) and Hildebrand *et al.* (2002) concludes that the TMSP concept, has an overarching coherence of planning for achieving a common goal.

Chapter Three – TMSP Approaches and Challenges

3.0. Overview

This chapter is the third of the three theoretical underpinnings for this research. Essential issues discussed include the evolution of MSP, the UNESCO's step-by-step approach to MSP, a critical assessment of both unilateral and multilateral approaches to MSP, and the significant challenges confronting TMSP practices. The discussions further examines issues relating to the fundamental concept of MSP and TMSP and the possibility of translating unilateral MSP to multilateral approaches.

3.1. The evolution of marine spatial planning

In ocean management practices, designation of marine areas to balance the need of ocean users, technocrats and policy actors, and restore healthy ecosystem, is not essentially new. Rather, the emergence of innovative planning tools for marine spatial planning has been leveraged over the last three decades in ensuring environmental sustainability and preventing maritime-based conflicts since the arrival of the Polish MSP process in 1991 (IOC, 2019; & Ehler, 2015). Following the 2014 EU-MSP Directive (2014/89EU), in 2015, the EU Maritime Affairs report stipulated that only thirteen MSPs were approved by various governments, with 44 yet to be approved, leading to 57 by 2021 based on predictions (Ehler, 2015). Compared to a 6.9 per cent of growth rate in 2015, such a rate is expected to amplify to about 43.1 per cent by 2025, announcing the global transformation of MSP. MSP as a unilateral approach, has been defined by Ehler and Douvere (2009) as a tool for unifying policy actors, stakeholders and practitioners in a planning process with the use of a framework capable of preventing maritime-based conflicts and enhancing blue economic growth.

Fig 15. Prevention of marine conflicts in the southern California (United States). *Source:* (Crowder *et al.* 2006).

In the last three decades, about 70 or more countries have been considering a host of marine spatial planning approaches (Stelzenmuller *et al.* 2013). One missing element, however, was a systematic formulation and implementation of marine spatial planning (Ehler, 2008). In 2005, the possibility of making this dream a reality became an important subject during an expert's conference on Ocean Zoning at the National Centre for Ecological Analysis and Synthesis (NCEAS) (Ehler and Douvère, 2009). Following this conference, a Working Group concluded to develop a step-by-step approach to help standardize global practice and further prevent the cyclical nature of maritime-based conflicts between sectors and the environment (Gilliland and Laffoley, 2008). This development led to the creation of an MSP guide by the Intergovernmental Oceanographic Commission to coach practitioners and non-practitioners. After the release of a technical report on "Visions for a Sea Change" symposium held at the UNESCO-IOC headquarters in 2006, IOC hosted a further symposium on issues relating to Marine Policy in September 2008 to launch this manual or guide christened as the step-by-step approach to ecosystem-based MSP, and published this guide in 2009 (Katsanevakis *et al.* 2011). The guide was primarily tailored to bridge the gap between the inexperienced, social scientists and experts, and was developed based on the author's experience, case studies and critical assessment of MSP practices across the globe (Ehler and Douvère, 2009). The guide further seeks to coach practitioners to prepare a detailed geo-spatial analysis, and provides littoral states with the needed leverage to build on their existing policies within the framework of marine spatial planning, and enhance their ability to formulate, implement and operationalize marine spatial plans with multiple objectives (Stelzenmuller *et al.* 2013; Maes 2008 and Olsen *et al.* 2011). In this guide, the ten steps were provided to follow six basic principles: 1), To balance political, economic, social, technological, legal and environmental goals and objectives toward sustainable development; 2), To engage multiple sectors and agencies among governments; 3), To actively engage stakeholders in the planning process; 4), To carry out long-term goals; 5), To learn from experience; and 6), To focus on the planning area. The guide, in essence, consists of a series of tasks to help complete a single step in the MSP process. This is to mention that the initial sections of the guide took into account a number of technicalities in the planning process, whereas the concluding sections issued political and social guidance to practitioners. In all, the entire guide seems simple, but latter expressed stakeholder concerns demonstrate that achieving this process in reality may pose challenges to unilateral planning systems due to multiple sector based-interests and inadequate financial resources. Whereas this process is participative and stakeholder-led, Figure 16 outlines the ten 'steps' in detail with an interactive cycle of the process.

Figure 16. The ten steps to a successful marine spatial planning. *Source:* (Ehler and Douvere, 2009).

To successfully accomplish these steps in detail, it is imperative for ensuring that the process is appropriately followed to the latter. For instance, Step One defines the rationale for creating an authority to assist in implementing the plan and stresses how to effectively align boundaries and timeframe for the management area. In-line with other technical aspects, the process provides a set of criteria to identify human incompatibilities and biologically and ecologically sensitive areas. The steps, however, seem to have acknowledged a consensus planning process with an offer of a limited practical application. One glaring example is the approach of recommending authorities to implement the spatial management plan without the consideration of current and future challenges, particularly the cross-border pilot projects which mostly comes with an array of inter-jurisdictional expectations. Another procedural weakness is also reflected in the later task of approving non-statutory plans with an absence of a strategic scheme for addressing anticipatory challenges – which may critically not offer practical implications for management regimes due to multiple sector-based interests and differing planning strategies in the world over. Although the objective of stakeholder engagement is precisely to overcome such a challenge usually at the draft stage of planning, yet, it deems fit for management regimes to adopt a multi-sectoral implementation approach with the view of engaging sectoral steering committees and an interagency MSP task force to minimize the workload on the planning authority. It is also imperative to note that, due to the difficulty of having to engage multiple sectors in the implementation process, the adaptive approach is highly recommended to assist sectors to learn from their experiences in order to curb potential implementation challenges. As much as a draft plan is recognized as a guide with hopefully thorough information, the limitations are that, they often emphasize a stringent universal remedy for management regimes, objecting to the importance of the adaptive process, where the practice should focus on the planning process rather than producing a plan (Flannery *et al.*, 2016). Indicating that MSP is an iteratively evolving and continuous process with inclusive, equitable and transparent management strategies tailored to the management area (Dandy *et al.* 2002). The following section in extension, discusses the tools relevant for eliciting MSP data.

3.2. Geographic Information System (GIS) as a tool for eliciting MSP data

In marine spatial planning, one of the most essential elements to consider is data to ensure quality and constant geospatial analysis for the geophysical, geological, oceanographic and habitat characterization (Agardy, 2010). Data plays a crucial role in identifying the ecological impacts and topographic features of the sea bed (Edward, 2008). According to Hendrick (2005); and Day *et al.* (2008), in the process of eliciting MSP data to create the ecological data layers and inform stakeholders, the overriding tool is the GIS software. With the use of this software, the ecological data layers are converted into integrated data products to assist in visualizing and analysing the geospatial information (Stelzenmuller *et al.* 2013; and Heipke, 2010). Kenchington & Day (2011) hinted that in geospatial analysis, the ecological data layers indicating the data products are termed as polygons. The figure below is a visual representation of such polygons. This task can also be seen in step 5 - 6 of the MSP process.

Figure 17. Visual representation of integrated data products. *Source:* (WMSP 2016).

In ideal situations, the MSP process further ensures three categories of spatial data or inventories (Klenke and Schenke, 2002). Such inventories or data help in: 1), ascertaining the mapping information about human activities in the area; 2), ascertaining the mapping information about the ecological, environmental and oceanographic conditions in the area; and 3), ascertaining the current incompatibilities in the area (Michael *et al.* 2003). In gathering such inventories or data, the coastlines and baselines, zones, administrative boundaries, management and protected areas are taken account of. Other areas may include cables and pipelines, shipping routes, coral reefs, anchorages, oil and gas exploration and production areas, natural habitats, aquaculture and archaeological sites (Jakobsson *et al.* 2005). With regard to the ecological features, territorial and oceanographic conditions, it is imperative to take account of the bathymetry of the ocean and its living organisms. Examples of these biologically or ecologically sensitive areas include: “areas of high biodiversity, areas of high endemism (species, populations or communities), areas of high productivity, i.e., upwelling areas, aggregation sites, spawning/breeding areas, calving areas, feeding/foraging areas, nesting/staging areas, nursery areas, haul-out areas, migration stopover sites, points/migration routes, wetlands, sea grass beds, and coral reefs” (Gardner *et al.* 2006). In undertaking this task, it is also essential to derive a set of criteria to guide the data acquisition process as outlined in Table 4 below.

Table 4. Criteria for identifying biologically sensitive areas. *Source:* Convention on Biodiversity, (2008)

Criteria	Definition	Rationale
Uniqueness or rarity	Areas containing either (I) unique (the only one of its kind), rare (occurs only in few locations) or endemic (unique to a particular geographic location) species, populations or communities, and/or (II) unique, rare or distinct habitats or ecosystems; and/or (III) unique or unusual geomorphologic or oceanographic features.	These areas or species/populations are irreplaceable, and their loss would mean the probable permanent disappearance of diversity/a feature or reduction of the diversity.
Special importance for life history stages of species	Areas required for a population to survive and thrive.	Various biotic (living) and abiotic (non-living) conditions coupled with species-specific physiological constraints and preferences tend to make some parts of marine regions more suitable to particular life stages and functions than other parts.
Importance for threatened, or declining species	Areas (I) containing habitat(s) for the survival and recovery of endangered, threatened, declining species; or (II) with significant assemblages of such species.	To ensure the restoration and recovery of such species and habitats.
Vulnerability, fragility, sensitivity or slow recovery	Areas containing a relatively high proportion of sensitive habitats, biotopes (small, uniform environments occupied by a community of organisms) or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	The criteria indicate the degree of risk that will be incurred if human activities or natural events in the area or component cannot be managed effectively or are pursued at an unsustainable rate.
Biological productivity	Areas containing species, populations or communities with comparatively higher natural biological productivity.	Important role in increasing the growth rates of organisms and their capacity for reproduction, and providing surplus production to adjacent areas.
Biological diversity	Areas: (I) containing comparatively higher diversity of ecosystems, habitats, communities, or species, or (II) with higher genetic diversity.	Important for evolution and maintaining the resilience of marine species and ecosystems.
Naturalness	Areas with a comparatively higher degree of naturalness as a result of the lack of, or low level of, human-induced disturbance or degradation.	Natural areas can be used as reference sites and will likely safeguard and enhance ecosystem resilience.

3.2.1. Collection of mapping information and identifying current incompatibilities

Experts such as Ehler & Douvere (2009) assert that designating marine zones to specific uses further requires a compilation of spatial data on human activities ranging from sand and gravel extraction, fishing, oil and gas exploitation, marine transport and tourism and presenting such data in a data atlas software. Subsequent to the analysis, if there is no significant overlap, the unexploited zones may be earmarked for future uses. Noting that, areas designated for offshore wind farms may not be compatible with marine transportation or sand and gravel extraction. Alternatively, sand and gravel extraction may also not be compatible with offshore pipelines and cables. Ascertaining such incompatible activities, however, requires the design of an incompatibility matrix as presented in Table 5 below.

Table 5. A compatibility matrix entailing human use conflicts. *Source:* (Ehler and Douvere, 2009).

<div> Keys <div> <div></div> Compatible </div> <div> <div></div> Probably compatible </div> <div> <div></div> Incompatible </div> </div>		Commercial Fishing: Net	Commercial Fishing: Hook/line	Commercial Fishing: Pots/traps	Commercial Fishing: Spears/harpoons	Commercial Fishing: Trawls/dredges	Commercial Fishing: Seine nets	Commercial Fishing: Beach seines	Commercial Fishing: Purse seines	Offshore Aquaculture/Mari culture	Recreational Fishing: Hook/line	Recreational Fishing: Pots/traps	Recreational Fishing: Shell fishing	Recreation: Sailing	Recreation: Boating	Recreation: Personal watercraft	Recreation: Scuba diving/snorkelling	Recreation: Wildlife watching	Marine transportation	Port and harbour operations	Port and harbour dredging
	Commercial Fishing: Nets																				
	Commercial Fishing: Hook/line																				
	Commercial Fishing: Pots/traps																				
	Commercial Fishing: Spears/harpoons																				
	Commercial Fishing: Trawl/dredges																				
	Commercial Fishing: Seine nets																				
	Commercial Fishing: Beach seines																				
	Commercial Fishing: Purse seines																				
	Offshore Aquaculture/Mari culture																				
	Recreational Fishing: Hook/line																				
	Recreational Fishing: Pots/traps																				
	Recreational Fishing: Shell fishing																				
	Recreation: Sailing																				
	Recreation: Boating																				
	Recreation: Personal watercraft																				
	Recreation: Scuba diving/snorkelling																				
	Recreation: Wildlife watching																				
	Marine transportation																				
	Port and harbour operations																				
	Port and harbour dredging																				

3.3. Projecting current and future trends in the management area

This stage of the planning process essentially takes account of the current activities in the marine environment known as the ‘trend scenarios’. Maes *et al.* (2005) affirmed that these scenarios are often developed to ascertain the number of years taken by each sector to occupy extra marine space in order to inform planners about the highest and the lowest degree of marine space-expansion by each sector in the next 5 to 100 years. The outcome, however, enables the planner to develop trend scenarios for each sector. The projected trend must indicate when, where and how human and non-human activities will transpire in the management area, and also take account of new demands for marine space as these demands are mostly triggered by contemporary policies. To this end, develop a “sea use scenario” and specify the exact location of your alternative human and non-human activities based on the estimated space-allowance. Figure 18 indicates the percentage of extra space earmarked for each sector in the Belgian part of the North Sea.

Figure 18: Projected human and non-human uses. *Source:* (Maes *et al.*, 2005).

Maes *et al.* (2005) reiterates that selecting your preferred scenario requires the assessment of the economic indicators of your alternative human activities using recent financial statistics, inflation rates, projections, trade trends and expert's advice. Following this, if a marginal progress or an upward trend in any area of marine use is realized, high emphasis must be placed on that area as a preferred scenario. To avoid high cost and difficulties in the implementation of your preferred scenario, it is essential to consider the cost of implementation, expected time frame for implementation, and stakeholder acceptance of the preferred scenario.

3.4. Critical assessment of unilateral and multilateral approaches to MSP

In the last three decades, a broad and diverse literature has emerged to explore possible means of realizing robust ocean governance strategies across settings. Marine spatial planning as a practical mechanism for ocean governance, was traditionally planned on a unilateral basis, without the consideration of transboundary or multilateral approaches (Douvere *et al.*, 2007, pp. 182-191; Young *et al.*, 2007, pp. 22-27; Douvere, 2008, p. 764; Ehler and Douvere, 2009, pp. 18-19). Such practice has equally engaged eulogy and criticism, partly because the opportunity for single States to learn from each other is overlooked, whilst post implementation challenges persist (Jones *et al.* 2016). Kull *et al.* (2017) additionally provides a revelation on the Baltic SCOPE project engaging concepts such as 'stakeholder engagement', 'sectoral participation' and 'unilateral planning' which apparently does not have the same meaning in various jurisdiction – contributing to the varying degrees of understanding in each State, sectors and levels. Experts such as Bille (2008), Jones *et al.* (2016) and Ostrom and McGinnis (1992) argue that a misconception may be created that unilateral approaches, are achieving outcomes that perhaps are not due to challenges ranging from disparities in legal frameworks, unequitable social expectations / understanding and conflicts of interest across sectors. Moutinho *et al.* (2006) and Gioia & Pitre (1990) further underscored that in theoretical fact-finding, unilateral approaches often lead to intellectual provincialism with the researcher biased consciously or unconsciously as against alternative accounts of the phenomenon he or she investigates. In practice, unilateral approaches encompass merely national strategies and plans as against multilateral approaches which ride on a number of transboundary pillars to assist in maximizing cooperation and promoting peaceful co-existence, enhancing coordination and preventing future overlapping entitlements, protecting and developing the environment to encourage blue

economic growth within the framework of TMSP (Queffelec & Maes, 2015; Soininen, & Hassan, 2015). Henrichs (2007) argued that transboundary marine spatial planning as a multilateral approach, has a central coordination function that brings disjointed decision-making regimes under one umbrella for the purpose of harmony. As prescribed in the preamble of the Convention, one important priority of the UN “is the desire to settle, in a spirit of mutual understanding and cooperation, all issues relating to the law of the sea; promoting peace, justice and progress for all peoples of the world”. In-line with this vision, Goal 16 of the 2030 Sustainable Development Agenda, also seeks to “promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels. Goal 14 also proposes to “conserve and sustainably use the oceans, seas and marine resources for sustainable development.” The afore-discussed UN goals and targets demonstrates that nations which overlook or neglect the positive impact of transboundary marine spatial planning, might transform from unsinkable status to become sinkable, just like the Titanic was believed to be unsinkable. Although the underpinning principles and methodologies employed for both unilateral and multilateral approaches are similar, yet the transboundary marine spatial planning principles and methodologies, augments some of the inherent difficulties in the unilateral planning approaches (Morf *et al.* 2019).

It is imperative to note that since the enactment and codification of part XII and XIII of the Convention, transboundary marine spatial planning practices across the globe, have been considering five cardinal principles including the principle of fit, the principle of multiple use, the principle of stakeholder engagement, the principle of monitoring and evaluation, and, the principle of adaptive management. The principle of fit, aims at preventing disputes between governments, physical and socioeconomic activities (Young *et al.* 2007). The principle of multiple use, refers to strategic mechanisms that establish priorities to avoid future overlapping entitlements (*ibid.*). This principle actually helps in separating conflicting marine users. The principle of stakeholder engagement, is the process by which a planning regime involves people who may be affected by the decisions it makes or can influence the implementation of the spatial plan. The monitoring and evaluation principle focuses on the process that aid in ameliorating the operations of the draft plan more generally. This principle, however, aims at improving the goals aligned and future management outcomes. The adaptive management principle is also taken to mean managing according to a plan by which decisions are made and modified as a function of what is known and learned about the former system, including information about the effect of previous management actions (Parma, 1998, p. 26). Ultimately, one cannot talk about the cardinal principles of TMSP and neglect the key methodologies that helped in building such principles. According to Day *et al.* (2008); and Maes (2008), these key methods further inform planners, policy actors and stakeholders to arrive at a successful and conclusive process; and these processes include how to:

- develop an integrated framework for all uses of the sea and take account of the political, economic, ethical, social, technological, legal and environmental factors;
- embrace all existing and future marine uses, developments and activities, together with natural resources, features, and processes;
- extend to all marine waters within the relevant jurisdiction, e.g., the EEZ;
- apply the ecosystem approach to the regulation and management of activities in the environment by safeguarding the ecological processes; this will ensure resilient ecosystem services and enhance socioeconomic benefits;
- articulate policies to achieve multiple objectives;
- provide a strategic, efficient and cost-effective approach to information gathering, management, and access, thus reducing the burden and duplication of effort between individual sectors and encourage greater data availability than at present;

- analyze the environmental conditions and enable a more efficient decision-making process to offer benefit to marine regulators, experts, ocean users and their advisors;
- promote inclusive and transparent stakeholder participation and ensure the involvement of all relevant stakeholders, including ocean users and local communities;
- facilitate coordination between government agencies to enhance effective integration;
- create appropriate marine spaces by providing balance for users, highlighting where human activities might conflict with each other, and where possible, re-locate the incompatible activities;
- practically adopt the spatial management plan; and
- monitor, implement and review the management plan (Jay, *et al.* 2016; Hildebrand, *et al.* 2002; Douvère, 2001, 2007, 2008; Ehler & Douvère, 2009; and Foley, *et al.* 2010).

Figure 19. Key methodologies in transboundary marine spatial planning (Derived in this research).

3.5. The practical challenges to TMSP as identified in this study

Since the concept of transboundary marine spatial planning came into practice, through theory and experience, academics and practitioners have been exploring a series of mechanisms for addressing practical challenges and bridging the planning and implementation gaps. To resolve such impediments, the following section deciphers the challenges confronting TMSP practices and stresses how practitioners argue these challenges could be addressed or perhaps yet to be addressed – in-line with lessons learned from TMSP practices to date. In the process of identifying such management limitations, Table 6 below provides an overview of the significant challenges derived in this study.

Table 6: Significant challenges to transboundary marine spatial planning identified in this study.

Financial capacity	Fund management and;	Future investment
Stakeholder engagement	Joint agreement	Political and legal support
Planning complexities	Data acquisition	Plan implementation

3.5.1. Challenge one: financial capacity

Transboundary marine spatial planning in its practical sense, requires adequate financing. Particularly when obtaining financial support for your ensuing programs and activities (McCann *et al.* 2014). Organizing stakeholder conferences and fora, capacity building and training of personnel to improve the technical knowhow, in addition to process management, also takes time and money (Armstrong, 2009). Even in the midst of a well-organized team, stakeholder engagement is financially demanding, mainly because it requires a number of public outreach efforts, series of meetings and conflict resolutions. According to Ehler & Douvère (2009), in some cases, government agencies are given the responsibility to undertake TMSP programs and activities without any source of funding. To address such challenges, regimes may ultimately provide a pre-financing plan in addition to an alternative financing mechanism to help secure funds for their programs and activities. Alternative financing in this regard may include, for example, grants or funds from a private entity, international and multinational organizations, foundations, partnerships with non-governmental organizations and user-fees. Stressing that alternative financing helps, because changes in circumstances can cause a particular funding source to diminish for a period of time. For this reason, in 2002 China enacted a Law on Ocean Management which identified a user-fee regulation system to generate additional revenue from ocean users who ply the management area (Adapted from China's Sea Use Management Li, 2006). In alternative financing, planning sectors are involved in producing a satisfactory financial estimate for their activities before executing the scheduled programs. Ehler & Douvère (2009) added that the alternative financing mechanism further requires one to define the feasibility of the funding source by assessing the political, economic, social, technological, legal and environmental conditions in that management area. Ehler & Douvère (2009) conclude that this approach assists planning agencies to gain the needed leverage for commencing the MSP programs and activities, and can also prove to be much flexible to single funding. Although such financing mechanism is applied to MSP, but it can also be applied to the TMSP planning process. Concluding that setting up an MOU for the planning sectors with the intention to commit to implementation and ensuring that due consideration is given to financial and human capital is highly recommended.

Alternative Financing mechanisms	Source of revenue
Government revenue allocations	
Direct allocations from government budgets	Government budget revenues; taxpayers
Government bonds and taxes earmarked for MSP	Tax payers; investors who purchase bonds
Grants and donations	
Bilateral and multilateral donors	Donor agencies
Foundations	Individuals; corporations
Non-Governmental Organizations (NGOs)	NGO members and supporters
Private sector	Investors
Conservation trust funds	Multi-source
Tourism revenues	
Diving fees	Divers
Yachting fees	Yachting community
Tourism-related operations of protected area agencies	Tourism operators; tourists
Voluntary contributions by tourists or tourism operators	Tourism operators; tourists
Energy revenues	
Royalties/fees from oil and gas, wind farms, wave parks	Energy companies
Right-of-way fees for oil and gas pipelines	Energy companies
Oil spill fines and funds	Energy companies
Voluntary contributions by energy companies	Energy companies
Mining revenues	
Royalties and fees from offshore mining companies	Mining companies
Voluntary contributions by offshore mining companies	Mining companies
Fishing revenues	
Tradable fishing quotas	Commercial fishers
Fish catch and services levies	Commercial fishers
Eco-labelling and product certification	Seafood producers, wholesalers, retailers/end-user
Fishing access payments	Governments; associations and individual fishers
Recreational fishing licence fees and excise taxes	Recreational Fishers
Aquaculture permit fees	Aquaculture industry
Marine transportation revenues	
Oil spill fines and funds	Marine transportation industry
Contributions by marine transportation industry	Marine transportation industry

Table 7: A list of alternative financing mechanisms. *Source:* (Ehler and Douvere, 2009).

3.5.2. Challenge two: Fund management and enabling conditions for future investment

Following implementation of management plans, experience across the globe demonstrates that the enabling conditions for planning authorities to invest in human capital and manage funds effectively, is a critical challenge merely due to minimal revenue earnings (IOC, 2015). To curtail a challenge of this nature, aside from the alternative financing mechanism, in accordance with Art. 164 of the Convention, the planning authority is expected to constitute an Economic Planning Commission to assist in providing Economic Regulations and include a strategic scheme for mobilizing Internally Generated Funds through: 1), Single State Dues 2), Tourism Revenue, and 3), Penalty Charges on illegal fishing, shipping, ports and harbours operations, pollution and other illegal activities. In this section, the discussion chiefly aims at providing insights on the classification and definition of fund management systems across the globe. In perspective the term fund management, is predominantly used in the financial sector for describing entities that manage asset portfolios such as shares, bonds, treasury bills and fixed deposits on behalf of others (Bower, 1970). In the process of fund management, an investment advisor provides advisory services and directs decisions based on the investor's

preference (Fabozzi *et al.* 1995). This study identifies two forms of fund management services, namely, tangible assets, which refers to infrastructure, and intangible assets, which refers to human capital and intellectual property (Mizukami, 2002). In terms of human capital, fund managers are engaged in the process to manage assets such as corporate funds and so on, in order to meet the prime objectives of the investor (Cochran & Wood, 1984). According to Michalski (2007) and Farrell and Reinhart (1997) in maritime shipping, the term asset portfolio as mentioned earlier is also used to describe an insurance policy which covers both time and voyage periods, alternatively known as the mixed policy. This type of policy actually covers some aspects of a voyage policy and a time policy, for the purpose of mitigating and balancing shipping risk. It is important to note that the discussion on asset portfolio was essentially provided to enhance clarity. Table 8 below, provides the major asset portfolios in the sphere of fund management services.

Table 8. Major asset portfolios in the sphere of fund management (Derived in this research).

Classifications	Key definitions
<i>Shares:</i>	Contribution of funds for future benefit based on stock valuation.
<i>Bonds:</i>	A financial loan to an investor for a set of period at a variable interest.
<i>Fixed Deposits:</i>	An investor's roll-over account that attracts high interest on maturity.
<i>Treasury Bills:</i>	A short-term zero interest earning security purchased at a discount.
<i>Savings Account:</i>	A bank account that accumulates a marginal interest for future use.

3.5.3. Challenge three: stakeholder engagement

The term stakeholder engagement, is an ongoing commitment by a group of people with a transparent and shared vision primarily tailored to side-step negative outcomes or unequal benefits to planning regimes (Flannery *et al.* 2016). In the sphere of transboundary marine spatial planning, stakeholders are classified as social groups, NGOs and maritime agencies who has prerequisite skill and expertise to participate in the TMSP process in order to ensure solidarity, cohesion, mutual benefits and most importantly, a meaningful engagement that reflects transparency, trust, and encourages long-term development (Matten and Crane, 2005). Such a process further demands fairness to help achieve effective planning and avoid future conflicts. This implies that stakeholders are often disconnected, neglecting the significance of 'meaningful engagement' which generally poses critical challenges to both policy actors and practitioners. In a related development, studies have shown that stakeholders are consulted late, mostly on strategic and important matters (Jones *et al.* 2016). In the case of Ghana, Côte d'Ivoire's and Benin's TMSP process, the planning rather engaged inter-agency meetings and sought approval through the bureaucratic system of politics. Jones *et al.* (2016) asserts that, such an approach impedes meaningful engagement and ceases other stakeholder groups from their important inputs and impressions. In this state, certain group of participants end up being the main drivers of the process with other groups excluded (UNEP, 2014). The risk is that, excluding relevant stakeholders has the tendency of hindering the planning process with limited access to successful implementation (Ehler, 2008).

While some planning regimes conduct rigorous stakeholder engagement approaches, others argue that ad hoc consultative approaches with an advisory capacity seem more effective (Bones, 2015). Candidly, both approaches can be said to be very viable, but what constitutes

meaningful engagement can be dependent on social factors arising from the current political strength, previous management strategies and public expectations. It is an undeniable fact that a rigorous stakeholder engagement approach can sometimes engage social mistrust as a result of conflict of interest and other social vices. For this reason, practitioners are well encouraged to consider alternative means of engagement to assist in meeting the needs of the civil society, policy actors and the ocean users (Alley, 2016). Although many stakeholder engagement approaches exist, ranging from casual interactions, as well as formal and informal social gatherings, but McCann (2016) attests that informal social gathering on the other hand, assists in building social trust and public confidence in the planning process and enhances the commitment of stakeholders to the plan. To achieve such principal objectives, it is imperative to indicate when, where and how to consult stakeholders based on your management trend and engage diverse views with varying management mechanisms. Such an approach enhances the existing knowledge and understanding about the entire process (Alley, 2016). To produce an efficient and effective result in this process, the following key questions are considered paramount: 1), who should be involved in this process? 2), when should stakeholders be involved in the process? And; 3), how should stakeholders be involved?

Defining who should be involved in the process

The following practitioners represent the key stakeholders who must be involved in the process: 1) the legislature and the executives, 2) the judiciary, 3) maritime authorities, 4) technocrats, 5) academia, 6) relevant maritime agencies, and; 7) ocean users, NGOs and the civil society.

Defining when to involve stakeholders

The following Steps in the TMSP process are considered vital for stakeholder engagement.

Step 3: The pre-planning stage;

Step 5: Defining and analysing the existing conditions in your marine area;

Step 6: Defining and analysing the future conditions in your marine area;

Step 7: Developing the marine spatial plan;

Step 8: Implementing and enforcing the marine spatial plan; and

Step 9: Monitoring and evaluating the plan performance.

Defining how to involve stakeholders

Below provides an overview of how to involve stakeholders in the TMSP process.

- i) *Communication*: The planning group are expected to provide a succinct roadmap for the authorities and obtain approval before starting the process;
- ii) *Information*: The authorities will then inform the public in explicit terms about their decisions and intentions after reviewing the roadmap in order to enhance confidence;
- iii) *Consultation*: The authorities shall at this point consult other experts for suggestions;
- iv) *Dialogue*: In order to enhance proximity and mutual understanding, stakeholders shall interact about how to address the existing geospatial problems as identified;
- v) *Concertation*: Horizontal stakeholder interaction for achieving a good outcome; and
- vi) *Negotiation*: At this final stage, the authorities and the stakeholders equally decide on the outcome of the management plan (Bouamrame, 2006).

Figure 20. Defining how to involve stakeholders. *Source:* (Bouamrame, 2006).

3.5.4. Challenge four: achieving joint agreement

The era of joint agreement is ascending with often unequitable outcomes as social systems in the developing world inherently favour the political class to the detriment of the masses. Alternatively in the western world, Flannery *et al.* (2016) argues that the neoliberal system of governance, which tends to favour free-market capitalism for industries, practically possess more power in decision making, which in turn, disenfranchises political voices for a fair consensus. As compromise is essential for every planning regime, the win-win scenario, however, provides equitable outcomes for both political and non-political societies (Jones *et al.* 2016). Globally, there is a deep-seated misconception about reaching an efficient joint agreement through consulting and coordination via a roundtable. In practice, the “strategic partnership agreement” between Ghana and Côte d’Ivoire for instance, evolved with high friction, creating political and social tension as a result of lack of communication between stakeholders. Bille (2008) reiterates that one of the possible means of reaching an efficient joint agreement is to engage stakeholders in effective communication, which also poses the risk of temporarily satisfying the ideals of the stakeholders wholly or partly to the detriment of the masses being served. Implying that lower officials within the stakeholder groups may at some point settle for less while higher officials with more influence benefit from the consensus. Such a challenge may, however, require the services of an impartial oversight to assist in balancing outcomes and satisfying the expectations of the masses being served (Bille, 2008). This implies that the concept of unequitable outcome, impedes true consensus making room for variant trade-offs (Jones *et al.* 2016). Flannery *et al.* (2016) maintains the notion that in reaching a joint agreement, the consensus-building process often creates winners and losers, endangering the losing Party to compromise beyond undesirable conditions which sometimes obstructs the TMSP process and the progress of the entire plan. Flannery further shares the epistemological connotation to unequitable outcomes, stressing that it is rarely unconventional across settings to treat all stakeholders as equal, which therefore affects consensus building by paving the way for different levels of organizational influence. Such argument points to the fact that that joint agreement in its natural sense, has several meanings, to different stakeholders, as practitioners are beginning to understand that consensus building is certainly not a practical base approach due to its porous means of influences. Indeed, lessons learned from the establishment of the strategic partnership agreement between Ghana and Côte d’Ivoire through a transboundary MSP experience demonstrates that effective communication between governments and win-win scenario holds the right tool for a true consensus. The preceding argument implies that if State hierarchies are able to channel a common goal through policy and provide the enabling environment for stakeholders to communicate effectively and arrive at a positive conclusion, solutions will surface. According to MEAM (2015), other management regimes are utilizing

the advisory committees and smaller groups as means of reaching a true consensus in order to ascertain which range of methods achieves smooth and equitable outcomes or would be acceptable instead of a singular method.

3.5.5. Challenge five: political and legal support

To ensure effective ocean governance and adaptive management practice across globe, the potential of transboundary marine spatial planning cannot be realized in the absence of political and legal support from the governance machinery and regulatory agencies. This is due to the fact that a host of regimes succeed in the planning process following delayed or halted implementation in the absence of political and legal support (McCrimmon and Fanning, 2011). Challenges of this nature may be attributable to change of government and lack of policy continuity, unsatisfactory expectations from the governance machinery and regulatory agencies leading to public disagreement on the spatial development process (McCrimmon and Fanning, 2011). According to Flannery *et al.* (2016) such challenges are practically obvious in the absence of future contingencies as well as a robust legal and regulatory framework. Olsen (2003) argues that the provision of a “First Order” in a form of law or a decree to specifically appoint political authorities and regulatory agencies with the mandate of securing successful planning and implementation is required. Adding that the existence of a good legal framework in support of operational mandates, has the potential of sustaining the plan. In the United Kingdom for instance, the parliament in its decree conducted a thorough legislative amendment of eight sub-regions making room for a new management regime with the potential of sustaining the plan. This directive, however, assisted in providing a good legal framework and a mandatory implementation compliance model for the entire United Kingdom (McCrimmon and Fanning, 2011). In a related development, the management plan of southern California also received legal and political support through a legislative instrument to assist in achieving its planning and implementation goal. In this case, the argument over change of leadership and lack of policy continuity, economic instability, unsatisfactory expectations from the governance machinery and regulatory agencies as well as public disagreement to the implementation of the plan was non-existent, making the implementation process a success (Gleason *et al.* 2013). An analysis conducted by Queffelec and Maes (2015) demonstrates that the French-Belgian transboundary plan unexpectedly failed to legally mandate the planning process based on jurisdictional complexities and unsatisfactory expectations from the governance machinery which further left the plan in limbo. Concretely, the Intergovernmental Oceanographic Commission and UN Environment acknowledges that in transboundary planning, the absence of a strong legislative instrument and political support, jeopardizes the implementation goal. According to Ehler (2008), a significant number of planning regimes in Europe without statutory underpinning and enforcement, experienced delayed and halted implementation of draft plans.

3.5.6. Challenge six: complexities in the planning process

The concept of transboundary marine spatial planning, is promoted as a means of overcoming the insufficiencies that plague multilateral planning systems in addition to the incoherencies between stakeholders, planning groups and policy actors (Hassan *et al.* 2015).

Lessons learned from both small and large scale planning approaches demonstrates that in transboundary planning, regional approaches can be overwhelmingly cumbersome due to divergent cultural practices and differing national expectations (Jay *et al.* 2016). This justifies the reason most regional planning efforts adopt small-scale approaches as a key component to secure a large-scale management regime alternatively known as the decentralization system of management Jay *et al.* (2016); Ostrom & McGinnis (1992) and this method has proved successful for the network planning in California (Gleason *et al.* 2013). Indeed, the cumbersome nature of transboundary planning may also be attributable to the overly large number of littoral States involved in the planning process, attracting conflict of interests. In the process of accommodating such challenges, often, an array of general expectations and diversity of interest tends to frustrate the momentum of the planning process, halting the effort of the planning groups, stakeholders and policy actors (Ehler, 2008). Also noting that when more objectives are aligned based on the large extent of geographical scope, more effort and resources are required to execute the stated objectives. For this reason, it is imperative to decentralize the planning process (Hassan *et al.* 2015). In the affairs of Ghana, Côte d'Ivoire and Benin for instance, the decentralization system of planning was run smoothly through a limited effort which further allowed for national and inter-agency cohesion. Hassan *et al.* (2015) added that the decentralization of eight sub-regions in the United Kingdom, conducted through a legislative amendment, also helped in strengthening stakeholder engagement and unified regional expertise. Concluding that this approach was more effective in terms of driving distance for local meetings, conferences and fora. In the face of divergent cultural practices and differing national expectations, it is therefore suitable that the complexities of large-scale planning is addressed through a small-scale approach to assist in enhancing cohesion between stakeholders, planning groups and policy actors. Alternative perspective suggests that aligning defined roles and hierarchical structure of stakeholders and planning groups from various jurisdiction, is a key to sound management (Backer, 2011). Jurisdictional complexities on the other hand, may also be attributable to differing roles of legal authority and licensing power of various agencies from separate jurisdictions. Although each government has its management power and control over certain jurisdiction, in order to avoid disparities between governance regulations and international treaties, it is prudent to establish governance regulations in-line with international treaties. A glaring example can be referred to the federal republic of Belgium entering into several international maritime related treaties and concurrently providing separate regulations to satisfy the internal mandate of its maritime agencies (Queffelec and Maes, 2015). The adverse effect of such complications, however, was the loss of impetus in the planning process as a result of inconsistent national practice against international expectations (Queffelec and Maes, 2015). Such examples demonstrate that jurisdictional complexities can interrupt the momentum of transboundary planning. According to McCrimmon and Fanning (2011), integrating cross-border agencies to mitigate jurisdictional complexities also comes with an array of challenges. In the process of avoiding such challenges prior to decentralization, Bille (2008) suggests the establishment of a transnational liaison commission to regulate and coordinate transboundary regimes, and further stresses that this strategy has the potential of consolidating the legitimacy of planning agencies from various jurisdictions into a centralized system. The preceding argument connotes that in transboundary marine spatial planning, both 'centralization' and 'decentralization' systems of planning are essential, but any of these systems must be applied at the right place and at the right time. Ehler (2008) concludes that the centralization system of governance requires a set of management principles designed to suit the nature and characteristics of the planning process and reflect the results planners want to achieve. One example is the African Union 2050 Maritime Strategy Aim and Agenda which critically aligned a set of management principles to assist the entire continent. And these include the principle of adequate maritime space and resources, the principle of in-depth

knowledge and sound data, the principle of current and future uses, the principle of legal certainty, and the principle of policy guidance.

3.5.7. Challenge seven: data acquisition and management

The term ‘environmental sustainability’, has become a prime objective of several management regimes (Cicin-Sain, 1993). In seeking information relevant to environmental management, data or spatial inventory is considered germane by practitioners. A complete data set, however, ensures an informed long-term decision (Ehler and Douvère, 2009). To earmark aggregate extraction zones in Ghana for instance, an inter-agency plenary meeting was organized to ascertain the magnitude of data acquired and the impact on flora and fauna in the designated areas. This process, however, realized issues pertaining to data detention which revealed the difficulties in coming to agreement on shared data. Such practice, could be triggered by high data demand or inadequate area data. Further in the case of Oregon, a report filed by stakeholders assisted the planning authorities to recognize a number of information gaps pertaining to incompatible data storage and the inherent uncertainties in data interpretation / analysis which was also blamed on lack of participation by certain agencies. This challenge further destabilized the authorities from making informed decisions to assist the non-involved agencies (McCrimmon and Fanning, 2011). Bille (2008) points out that the evolution of scientific data is rapidly gaining value of which particular agencies in the maritime fraternity may have interest in using vital information for their benefit. More so, the current nature of the ecosystem and its constant battles with climate change makes it nearly impossible to expect targeted information at all times. In reality, the “precautionary principle” stands the chance of winning the battle against the above mentioned data limitations. This assertion is based on the fact that Art. 242, para. 2 of the Convention stipulates that “without prejudice to the rights and duties of States under this Convention, a State, in the application of this Part, shall provide, as appropriate, other States with a reasonable opportunity to obtain from it, or with its cooperation, information necessary to prevent and control damage to the health and safety of persons and to the marine environment.” Art. 146 additionally directs management regimes to take necessary measures to ensure effective protection of human life and adopt appropriate rules, regulations and procedures to supplement the existing international law as enshrined in relevant treaties. This acceptable principle has been practised for well over two decades and in reality, its application is unfruitful due to the confrontation of inter-agency data detention, storage, interpretation and climate obtrusion. In view, such challenges can be described as being of both scientific and social interest. Flannery *et al.* (2016) shares that the application of the precautionary principle, may economically swell in favour of policy actors and existing users due to the growing knowledge in corrupt deeds – therefore, it must be targeted vehemently on new users. One good example, is the development of the Rhode Island wind energy zone which realized insufficient data at the latter stage and quickly resorted to available data through a number of regional agencies and continuous outreach. Through this approach, a voluminous data set was acquired to inform long-term decisions (CRC. 2016). In contrast, a voluminous data set also requires the capacity for data management due to the uncertainties about when and where to apply the data. This assertion can be referred to the Rhode Island example which generated concerns over how much data to be applied now and in future (Ibid).

3.5.8. Challenge eight: plan implementation

Attesting to many accounts of regional MSP, the planning process is usually successful but with an abrupt failure in transition to implementation – mainly due to lack of inter-agency support in addition to political and legal support (McCann *et al.* 2014). According to Ehler and Douvère (2009), plan implementation, on consistent basis, has been perceived by practitioners as more challenging than the planning itself – with often lasting frustration to planners and practitioners. In the case of Eastern Scotian Shelf Integrated Management plan in Southern Canada, the planning process engaged strong commitment of academia and practitioners with an abrupt failure in transition to implementation due to lack of political and legal support (Flannery *et al.* (2016). In practice, one other challenge pertains to implementation without compliance. McCann *et al.* (2014) shares that implementation without compliance, is a recipe for failure. For this reason, each regime is advised to prepare compliance measures to help produce licenses, operating regulations and permits to assist in achieving optimum compliance. This process in essence, requires all parties involved in the planning process to provide their programs and plans in accordance with the compliance measures, or by considering the following actions: 1), authorities should educate all sectors about the operating regulations and indicate the task ahead of each sector; 2), sectors should further develop their code of conduct based on the regulations and provide guidance for ocean users; 3), sectors should finally use the operating regulations to manage their maritime zones and install navigation aids, such as buoys to indicate security zones and protected areas.

Subsequent to the attainment of such mechanisms, authorities are expected to enact a legislative instrument to enforce implementation and enter into a compliance bond with the ocean users. To this end, routine inspections should be carried out by an inter-agency task force to help determine the degree of compliance and violations. Legal sanctions such as monetary penalties, prosecutions, permits and license withdrawals are expected to be metered on violators. Banks and insurance companies should formally request compliance certificates before granting insurance policies and loans for establishing offshore facilities (Ehler and Douvère, 2009). As implementation remain the most important phase in transboundary marine spatial planning, it is prudent that planners focus on the carrying capacity for implementation at the preliminary phase of the planning process, with contingencies to side-step ensuing challenges (Gleason *et al.* 2013). Lessons learned in this chapter demonstrates that in spite of the eight emerging challenges faced by practitioners, the academia and policy actors, TMSP in its practical sense, presents and array of challenges which are not addressed or yet to be addressed by theory. In light of this, it is crucial that studies are conducted to assist in providing further recommendations to address such potential challenges as offered in Chapter 7.

3.6. Summary

In the search for proactive mechanisms capable of preventing maritime-based conflicts, the discussion in Chapter Two on joint zones and boundary delimitation in addition to the theories on TMSP in Chapter Three, has demonstrated that ocean governance is indeed a process, not an event. Having chronicled the evolution of MSP in this chapter, the UNESCO's step-by-step approach to MSP and a critical assessment of both unilateral and multilateral approaches to MSP, realistically, the fundamental concept of both MSP and TMSP is fulfilled in that context. To accomplish objective two of the study, this chapter in essence, sought to interrogate the contemporary TMSP literature and derive supplemental insights to address the identified challenges to TMSP practice across strata. In addressing these eight challenges to

transboundary marine spatial planning as chronicled in Table 6, a number of theories employed, were drawn from both unilateral and multilateral approaches – helping to justify the possibility of translating unilateral MSP to multilateral approaches. This implies that both unilateral and multilateral planning process can equally utilize the proposed theories and principles offered in this chapter to secure a successful regime. Ultimately, this study observes that the literature in Chapters 1, 2 and 3 focus on the theoretical underpinning, Chapter 4 analyses the contemporary practices to assist in identifying the strengths and weaknesses of TMSP regimes. According to Bradley (2012) and Ching (2014), establishing research theories literally assists in addressing theoretical lapses and gaps, while practical knowledge further complements the theories to deepen one's understanding for an effective output. This is to conclude that the theories provided in this research have exhibited the real meaning of action research. According to Brydon-Miller *et al.* (2003) and Whyte (1991), action research is a study carried out in a particular discipline to improve on the existing methods, principles and practices.

Chapter Four – Pros and Cons of TMSP Practice

4.0. Overview

In this chapter, the strengths and weaknesses of transboundary marine spatial planning practices are analysed. To accomplish this objective, criteria were established for the selection, analysis and interpretation of two transboundary marine spatial planning regimes. The derived findings, concepts and propositions are further contextualized to the TMSP process in the GoG region, coupled with innovative and strategic management measures to improve on the planning process, taking into account the current and future needs of the people in the region. Important discussion and specifications are as follows.

4.1. TMSP data input strategy and analysis

To help identify the management strengths and weaknesses of TMSP practice, this chapter applies a geographic treatment to data acquisition and employs a set of criteria as illustrated in Table 9 below for the data input. This data input criteria, however, was drawn from the theories on the ten step-by-step approach to MSP debated upon in Section 3.1. The application of this key criteria further allowed for a sequential ranking in order to conform to the PESTLE analytical tool. Brans & Vincke (1985) reiterated that ranking of data input criteria promotes sound analysis and enhances our understanding about the investigated phenomenon. The selected regimes include Canada's Marine Plan Partnership for the North Pacific Coast, and the Eastern Scotian Shelf Integrated Management. Per an extensive background reading by the researcher in this study, it was observed that the selected regimes are endowed with robust management trends, diverse regional planning strategies, elements, characteristics and experiences that the Mami Wata MSP Pilot Project in the GoG region could perhaps tap some considerable lessons from. Following is an illustration of the data selection and input criteria.

Table 9. TMSP data selection and input criteria (Derived in this research).

Analytical tool	Criteria used for the TMSP data input
<i>Political</i>	<ul style="list-style-type: none"> - Organize the process through pre-planning - Implement and enforce the spatial management plan - Adapt the spatial management process
<i>Economic</i>	<ul style="list-style-type: none"> - Obtain financial support
<i>Social</i>	<ul style="list-style-type: none"> - Organize stakeholder participation
<i>Technological</i>	<ul style="list-style-type: none"> - Prepare and approve the spatial management plan - Monitor and evaluate the plan performance
<i>Legal</i>	<ul style="list-style-type: none"> - Identify the need and establish authority
<i>Environmental</i>	<ul style="list-style-type: none"> - Define and analyse existing conditions - Define and analyse future conditions

Emphasizing that the selected regimes, were retrieved from <http://msp.ioc-unesco.org/world-applications>, www.pap-thecoastcentre.org and Hassan *et al.* (2015). According to Solberg (2000) and Stewart & Kamins (1993), secondary sources of data are second-hand information sourced from scholarly books, online sites, journal articles and encyclopaedia. Such information is usually transcribed by the researcher. As justified in section 3.6., establishing research theories assists in addressing the theoretical lapses and gaps, while the practical knowledge further complements the theories to deepen ones understanding for an effective output. This implies that the experience in TMSP practices been established as a body of knowledge in this Chapter, shall compliment the preceding theories to identify lessons and practicalities as well as lapses and gaps in TMSP policies and practices. Figure 21 below, demonstrates a pictorial view of the methodological-framework employed for this research.

Figure 21. The methodological-framework (Derived in this research).

4.2. Justifications for considering the PESTLE analytical tool

According to Srdjevic & Bajcetic (2012), PESTLE is a tool used for analysing social and environmental issues and discusses the outcome in real-life situations. This analytical tool uses the non-inferior set of criteria to uncover best technical alternative for future use. The recently developed PE (E) STLE unit of analysis, which recognizes ethics (E), can also be used for both social and environmental analysis, but central to Velasquez *et al.*'s (1987) definition, ethics is defined as a system of principles governing moral values and its acceptable conduct in a particular domain, and such moral values and its acceptable conduct, is enshrined in the first step of the MSP planning process. This process legitimately establishes a legal authority which identifies ethical values and maintains good ethical standards for the planning process. This reason, however, directs the research to employ PESTLE for the analyses. Srdjevic *et al.*, (2012) iteratively justifies the influential factors for PESTLE as illustrated in Figure 22 below.

Figure 22. The PESTLE influential factors. *Source:* (Srdjevic *et al.* 2012).

4.2.1. Technicalities in the use of PESTLE for analysis

In reality, secondary analysis involves the use of existing data to pursue research interests that are distinct from other research (Popay, Rogers and Williams 1998). According to Hinds, Vogel and Clarke-Steffen (1997); Szabo and Strang (1997), depending on the research approach, analysts usually select their preferred methods for the analysis. For this reason, the pragmatic rule was employed and applied using the theorem of induction, deduction and abduction. This theorem explains induction as the discovery of new patterns i.e., the selected regimes, deduction as examination of theories i.e., the analysis, and abduction as the discovery of the best technical solution i.e., the findings (Corti & Thompson, 1998; Hammersley, 1997; and Corti *et al.* 1995). Murphy (1990); and James (1995) further argued that the pragmatic rule or maxim, is superior for addressing social and environmental challenges. Therefore, upon selecting the secondary data or new patterns, the themes below shall be utilized for the analysis and interpretation.

Analytical themes

As stressed in section 4.1, the analysis in this chapter aims at uncovering the strengths and weaknesses of TMSP practices across settings. In the realization of this objective, the research utilizes the themes below for analysis. These themes were developed based on the theoretical insights in Chapters 1, 2 and 3, as well as the experiences and contributions from experts and stakeholders around the world. Indeed, these global experiences and contributions were presented to the European Commission in the form of a report, and was used as benchmark for developing the Rhode Island Ocean Special Area Management Plan released in 2017 (See, <https://oct.to/OC726>). These insights constitute the essential elements for effective practice.

• Adequate financing	• Desirable expertise	• Productive research and Dev.
• Good regulatory process	• Strategic goals/objectives	• Sustainable developments
• Effective coordination	• Effective plan revision	• Productive investment
• Good policy process	• Conflict prevention	• Satisfactory integration

To enable succinct understanding about the data interpretation of the two case studies, the preceding twelve analytical themes, shall be used as sub-headings under the political, economic, social, technological, legal and environmental. See section 4.4 as an example. This follows a series of italicized texts used to help observe how the selected regimes are achieving the analytical themes i.e., performance observation. Experts such as Card (1999; 2001); Holland (1986); Guba and Lincoln (1989, 1986) and Van Maanen (2011), hinted that it is essential to analyse secondary data and make reference to the underpinning theory i.e.,

hypothetico-deductive. This implies that the selected themes shall be used to interpret the secondary data by placing emphasis on the underpinning literature (Murphy, 1990). The decision to revisit the reviewed literature emanated from the theoretical testing concept. This is a technique mostly used for exploring research literature and concepts (Glaser and Strauss, 1967; Strauss and Corbin, 1990; Breckenridge and Jones, 2009). Hinds, Vogel and Clarke-Steffen (1997); Szabo and Strang (1997); Sandelowski (1997); Glaser (1992); and Thorne (1994), stressed that the approach considered is more credible for grounded-theory generation. Charmaz (2000) and Charmaz (2006), concluded that grounded-theory generation involves thematic analysis, as considered in this research. Subsequent to the secondary analysis, an evaluation shall be conducted. Carneiro (2013); and Annesley (2010), affirmed that to evaluate research results, the structural organization of the evaluation criteria must derive from the analytical themes. To ascertain the true strengths and weaknesses of TMSP practices, this procedure justifies the reason for using the analytical themes as performance indicators. To this end, the results shall assist in explaining any new understanding and insights about the entire research. The following sections provide the essential background and the structural orientation of the regimes selected for analysis.

4.3. Background and introduction to the North Pacific Coast

This section in context, discusses the background of the North Pacific Coast in the Canadian province of British Columbia. Ultimately, it is imperative to be informed not only of the economic, demographic and political elements of a regime as usual, but the historical antecedent of the management area, in addition to the planning and engagement strategies and governance structures. As illustrated in Figure 23, the geographic location of the North Pacific Coast encompasses four sub-regions including Haida Gwaii, North Coast, Central Coast and North Vancouver Island all in the Southern part of Canada in tune with a landscape of approximately 37,000 km coastal stretch with a size of about 453,000 km² (Short, 2010).

Figure 23. Canada's Marine Plan Partnership (MaPP). *Source:* IOC-UNESCO, (2016).

The MaPP management area is endowed with unique geographic features including 6,500 forms of Islands characterized by sea mounts with temperate rain forest as well as distinctive upwelling zones at the southern territory and downwelling to the north (Demarchi, 2011; and PNCIMA, 2013). Nowlan (2016) and Stocks (2016) asserts that in addition to the Marine Conservation Area, the ecologically and biologically sensitive areas of this region amounts to about 44 per cent with a number of National Parks and MPAs in operation accounting to approximately 3 per cent of the North Pacific Exclusive Economic Zone. This region is engrossed with complex and diverse planning authorities covering three levels of stewardship ranging from – federal, provincial and local government authorities with varying sovereignty over the water column, living and non-living resources, and seabed / sea surface (B.C. Ministry of Environment, 2009). In perspective, the sovereign complexity of this region is broadly outlined in Canada’s 1997 Oceans Act and regulations in addition to other relevant protocols and Conventions (Carr-Harris *et al.* 2015). Stressing the potential for effective planning and engagement strategies, this section attempts to provide a summary of the management authorities and underscores the essential responsibility of each governance machinery.

The federal governance structure: As established under the United Nations Convention on the Law of the Sea, the federal government has sovereignty over the provincial seabed from the 12 nautical mile zone through to the limits of EEZ, and an additional responsibility over negotiating international agreements with other States and as deem fit further engages the provisional authorities prior to the ratification of such agreements (Green Shores, 2009). As enshrined in the Constitution Act, fishing, shipping, fin fish aquaculture, navigation, defence and Indian Lands are all under the jurisdiction of the federal government. Under the Land Act, aquaculture development is required to be granted a land tenure by the Province with an approval through the Pacific Aquaculture Regulations (Alley, 2013). Through provincial regulations, the federal government shares sovereignty with the provincial government on inland waters which also involve offshore oil and gas, liquefied natural gas, renewable energy and other related activities such as fishing (Nowlan, 2016). In consonance with the Navigation Protection Act, the federal government exercises jurisdiction over the transport sector through Transport Canada and also governs the Port Authority, reserves the National Parks designated under the Marine Act (Nowlan, 2016). DFO (2009) maintains that the Department of Fisheries and Oceans, regulated by the Fisheries Act, is also responsible for the management of fisheries and habitats in addition to riparian and valuable offshore zones. As a lead Authority, the DFO in its mandate is designated through the power vested in the Minister to develop and implement activities which will positively impact on the estuary and marine waters (DFO, 2009).

The provincial governance structure: Following a reference filed by British Columbia in 1984, the Supreme Court of Canada in its delivery ruled that the British Columbia has jurisdiction over the seabed encompassing Johnstone Strait, Queen Charlotte Strait, the Strait of Georgia and the Strait of Juan de Fuca empowering the provincial Land Act as a primary instrument for governing B.C. (Nowlan, 2016). In consonance with the Land Act, British Columbia has sovereignty over both onshore and offshore waters, including high and low water marks promoting various levels of sovereignty in the grant of operational licenses and foreshore leases, in addition to a number of activities including fishing, aquaculture, floating lodges, marinas, log storage and so on (Alley, 2013; and Green Shores, 2009). Green Shores (2009) alluded to the fact that the Land Act, in-conjunction with the Ecological Reserves Act as well as the Parks and Protected Areas Act, allows for the designation of both human and non-human activities and also transfers authority from federal to the provincial status. Since the Supreme Court ruling in 1984, British Columbia has also exercised jurisdiction over both Dixon Entrance and the Hecate Strait in the affairs of lease granting and the establishment of MPAs (Nowlan, 2016).

The local governance structure: As deliberated earlier in this Section, the geographic scope of British Columbia is comprised of four sub-regions including Haida Gwaii, North Coast, Central Coast and North Vancouver Island. These sub-regions, however, exercise some degree of local governance authority over the riparian zones, near / foreshore, intertidal areas, and uplands. In application of the Local Government Act, these sub-regions further exercise independent authority over the establishment of community plans and zoning plans, issuance of permits and the development of bylaws to provide the enabling environment for blue economic growth (Green Shores, 2009). Where human population is growing, a number of municipalities in the aforementioned sub-regions also utilize such given authority to produce various zoning plans for their harbours, backshore, cliffs and embayment's (ibid).

4.3.1. The North Pacific Coast regional planning and engagement strategies

Aboriginal, is a term predominantly used in defining the indigenous settlements or inhabitants of a particular domain (Indigenous and Northern Affairs, 2010). This definition refers to the earlier settlement of First Nations (Inuit, Métis) and their jurisdiction over land and marine resources in the British Columbia. Nowlan (2016) shares that prior to the European Settlement in the mid-1800s, the earlier settlement and governance structure of this management area were highly advanced by the First Nations. Following this development, a co-led management system between First Nations and the federal government was constituted with a representation from the Ministry of Forests, Lands and Natural Resource Operations (FLNRO), and FN represented by a three tier group comprised of the Coastal First Nations (CFN), Nanwakolas Council, and the North Coast-Skeena FN Stewardship Society (NCSFNSS) (Graham and Mullen, 2016; & MaPP, 2016). According to MaPP. (2015) the structure of the North Pacific regional planning process provided the enabling environment for both First Nations and the Ministry of Forests, Lands and Natural Resource Operations to have equal authority and fair hearing in the decision making process. Implying that the members of the Executive Committee are comprised of both FN and its sister organizations as well as the Deputy Minister of FLNRO. See Figure 24 for further elaboration.

Figure 24. MaPP governance structure. *Source:* mappocean.org, (2019).

Furthermore, a Marine Working Group was constituted, comprised of the FN representatives and policy consultants. These two groups, under one umbrella, were mandated to channel all communications to the Executive Committee and also provide an advisory service to the Committee. A Marine Advisory Committee serving as a liaison team was additionally tasked to coordinate affairs of the Marine Working Group, including the two technical teams comprised of the Sub-regional Technical Team and the MaPP Technical Team. The core mandate of these technical teams was to incorporate both local / traditional knowledge and a vigorous scientific input to complete the four sub-regional spatial framework (MaPP. 2015). Where appropriate, both technical teams must complement the effort of the Marine Advisory Committee in the application of current and past experience to advance the process. The Advisory Committee was comprised of the ecologists, economists, geologists, planners, solicitors and academics charged to conduct research and identify key performance indicators capable of producing a resilient spatial framework (MaPP. 2015). The framework covering the four sub-regions, elaborates the significance of effective ecosystem-based management in addition to a robust governance structure from local to federal. As a means of deriving the Regional Action Framework (RAF) and accomplishing the general concept of ecosystem-based management, each zone designation was accompanied by a zoning plan to inform policy actors about the current and future conditions of the area and the recommended activities for each zone as included in the compatibility matrix which addresses the cumulative impact of human and non-human activities in the area. The regional action framework, aims at providing a detailed data supply to impact on the environmental conditions, economic growth and enhance the decentralization system of governance in the North Pacific Coast (MaPP. 2015). Table 10 below illustrates the goals and expectations of each sub-region in the North Pacific.

Table 10. Goals and expectations of each sub-region in the North Pacific Coast (MaPP. 2015).

Sub-region	Goals	Expectations
North Vancouver Island	Addresses high use of area and manage conflict of use, increase monitoring and enforcement and manage development.	Manage conflict, increase monitoring and enforcement and manage development
Central Coast	Enhance community and human wellbeing, prosperity and cultural resilience. Host a healthy marine ecosystem.	Improving governance, monitoring, economic development, and environmental protection. Conduct cumulative impact assessment, manage pollution, protect natural resources, enhance tourism and recreation and marine fisheries.
North Coast	Have resilient ecosystems, integrate First Nations and provincial marine use plans.	Improve governance, collaboration and consultation. Conduct cumulative impacts assessment, enhance sustainable economy.
Haida Gwaii	Conserve the ecosystem, enable marine economic opportunity, strengthen human connection to the ocean.	Improve governance, economic development, ecosystem monitoring, and enforcement. Conduct MPA network planning. Create education programs and response planning.

4.4. Analysing the Marine Plan Partnership for the North Pacific Coast (MaPP)

Political – Effective coordination, research and plan revision, and desirable expertise

In the MSP process, the third step underscores the importance of organizing the process through pre-planning. This step, however, provides a set of criteria for assessing the performance of the management process and organizing a marine spatial planning team which was practically driven by the MaPP Executive Committee, the MaPP Working Group, the Sub-regional Technical Team and the Regional Technical Team. The work plan of this team is prepared by an Advisory Committee comprised of the ecologists, economists, geologists, planners, solicitors and academics who were also mandated to conduct research and identify key performance indicators capable of producing a resilient regional action framework for the area (<http://msp.ioc-unesco.org/world-applications>, 2019). In spite of the fact that this regime has underscored the importance of engaging expertise to effectively coordinate affairs for the planning process, what is missing, is a risk assessment of what might go wrong during the planning process. Risk assessment becomes vital in this procedure because throughout the MSP process, the planning group, stakeholders and civil society may or may not agree on other procedural rules, goals and objectives due to political and economic interests. Such contentions can impede the entire process. Also noting that environmental and operational hazards remain a growing concern as a result of ineffective response mechanisms. For this reason, any pre-planning measures must be tailored to take account of future environmental risks and develop effective contingencies for preventing ensuing challenges (Ehler and Douvere, 2009).

Another vital element introduced in the regional action framework is a study conducted to derive a set of ecosystem-based management goals which include the: 1) “maintenance of integrity of the ecosystem structure, function and resilience; 2) supporting the socioeconomic and cultural connectivity to the marine environment as a means of enhancing community well-being; 3) achieving sound and integrated governance through collaboration, transparency and accountability; and 4) building knowledge of the ecosystem complexity and its potential future changes”. In addition to the aforementioned goals, Table 10 spells out in detail an explicit set of goals and expectations for the four sub-regions which were also developed through a peer-reviewed study (www.pap-thecoastcentre.org, 2017). In relation to data gathering, this peer-reviewed study in essence makes a little attempt in addressing the importance of engaging relevant audience making room for future collective disagreement. Other important issues outlined in the regional action framework include the multiple use principle which can be classified as a satisfactory regional integration approach. This set of principles merely takes into account Special Management Zones, General Management Zones and Protection Management Zones of which a taxonomic design of time-frame for analysing current and future conditions of these zones were underemphasized. It is worth stressing that this crucial task is extensively encapsulated in steps 5 and 6 of the MSP process recognized by UNESCO-IOC.

Aside from the establishment of the Advisory Committee, a series of committees were set up to engage with the federal government, the academic community, commercial and private entities, industries, community members and non-commercial ocean users, to share scientific knowledge and expertise for the development of the regional action framework. In the wake of fulfilling the socio-governance responsibilities in 2016, an implementation agreement was reached by the engaged parties including the federal government, First Nations and the MaPP Implementation Technical Team (<http://msp.ioc-unesco.org/world-applications>, 2019). Although this approach seems to represent effective coordination, minimal emphasis was placed on the implementation timelines, and compliance and enforcement measures for the agreed zones. Ehler and Douvere (2009) add that, in practice, compliance and enforcement measures ensures sanity and maintains smooth and efficient running of the plan. Subsequent

to this task, one most important development considered by the implementation team is the adaptation of the spatial management process. With this process, the regional action framework is envisaged to be revised every five years with a continuous evaluation in each twenty year range (<http://msp.ioc-unesco.org/world-applications>, 2019). Jay et al. (2016) shares that the decision to evaluate and revise a spatial management framework is an approach believed to provide vital *research* findings or information for *sustainable development*, but the inability to assess the performance of the management measures subsequent to implementation and explore alternative means of modifying and improving the management plan, i.e., the absence of an adaptation framework, may impede operationalization effort. Such a challenge can be detrimental since adequate data is required to begin the next round of planning.

Economic – Adequate funding and productive investment

Through a private-public partnership, the MaPP initiative was co-financed by the province of British Columbia, the Gordon and Betty More Foundation, and the First Nations accompanied with a Memorandum of Understanding signed in 2011 and amended in 2015 to reflect the planning and implementation objectives (<http://msp.ioc-unesco.org/world-applications>, 2019). As deliberated in Sections 3.5.1., and 3.5.2., such multiple financing mechanism essentially guarantee *adequate financing* for *productive investment*. Although marine spatial planning in its practical sense requires adequate financing as exhibited by this regime, yet one underemphasized financing mechanism is the enactment of ‘user-fee’ legislative instrument capable of mobilizing revenue to secure the planning process. It is also worth eulogizing the action taken by this regime to adopt the multiple financing mechanism. Ehler and Douvere (2009) note that in reality, changes in circumstance can cause a particular funding source to diminish for a period of time; this highlights the importance of embracing the user-fee revenue generation system ranging from fishing, shipping, mining, tourism and energy to secure the planning and management process.

Social – Effective coordination and desirable engagement of expertise

To effectively achieve MSP goals and objectives, stakeholder engagement is one of the most crucial tasks in the planning process as demonstrated in step four of the MSP process and extensively discussed in section 3.5.3. This approach in practice, involves people who may be affected by future decisions or can positively influence the plan development and implementation process, thereby enhancing knowledge and understanding about the entire process. In the history of the North Pacific Coast, aside from the Regional Marine Advisory Committee, a Scientific Advisory Committee was further set up with a representation of experts from the ecosystem services department, fisheries, ecology, ecosystem-based management, marine spatial planning and spatial analysis, economics, local government, academic institutions, commercial and private entities including industries, NGOs, community members and non-commercial ocean users to share scientific knowledge and expertise for the development of the regional action framework. These stakeholder group, incorporated traditional knowledge relevant to the management area. Engaging such management views and expertise were not limited to the representation from the oil and gas industry, renewable energy, transportation, tourism, forestry, public recreation and recreational angling, fisheries, fin-fish culture and shellfish aquaculture (<http://msp.ioc-unesco.org/world-applications>, 2019; and www.pap-thecoastcentre.org, 2017). It is undoubtable that the comprehensive stakeholder approach adopted by this regime demonstrated *desirable engagement* and enhanced *effective coordination* in the North Pacific management area. What is compelling, is the absence of other stakeholder groups such as

commercial shipping and certain FNs and their interest not to participate in the planning process even in the face of an accompanying formal invitation. As elaborated in section 3.5.3., such disengagement action may be attributable to the inability of planners to appropriately define how to engage relevant stakeholders through informal consultation and negotiation, dialogue, information sharing and communication outlining the overall vision and benefits of the regional action framework to the engaged parties and the region at large. This suggests that the existence of such management intervention could have served to mitigate the issue of stakeholder-disengagement in the planning process as witnessed in the case of both commercial shipping and other FNs. Per the discussion in Section 3.5.6., such complexities may also be attributable to the lack of a decentralization system which allows planners to align defined roles and hierarchical structure of stakeholders from various jurisdictions.

Technology – Desirable expertise, effective plan revision, coordination and research programs

As marine spatial planning has become an important subject of technological advancement, the seventh step of the MSP process highlights the significance of applying technology to prepare and approve the spatial management plan. In this process, planning regimes are more glued to developing a broader framework before translating it into a management plan, but in the case of North Pacific Coast, all four sub-regional plans were completed in 2015 prior to the regional action framework and approved by British Columbia and First Nations in 2016 outlining the future visions, governance structure and spatial / non-spatial management outcomes. Although each sub-region presented diverse and distinctive goals and objectives as outlined in section 4.3.1., hence the entire plan was structured to conform to the overall management goals and objectives in order to maintain continuity. The plan in perspective, made significant emphasis on the aboriginal title, jurisdictional importance and FN values to the marine environment in a very distinctive manner in addition to the recognition for effective ocean governance, and further cast into the vision for enhancing blue economic growth, environmental sustainability, and community wellbeing (<http://msp.ioc-unesco.org/world-applications>, 2019). Indeed, outlining the overall vision and planning arrangement of the MaPP regime presents a clear picture of what can be described as *effective coordination* by the planning group and the *expertise* required to complete the plan. Ehler and Douvere, (2009) assert that a satisfactory plan is a detailed document containing management decisions that enable planners to identify when, where and how management goals and objectives will be attained, and accomplishing this requires planners to identify a series of management measures using a set of criteria to develop the plan including management zones, and further evaluating and approving the plan with independent criteria. Pursuing this task enables planners to take account of management boundaries and maps, inform planners about the accomplishment of goals and objectives, and reveal the implementation timelines. In the spirit of recognizing this approach as a summary of the ten steps to ecosystem-based MSP, minimal emphasis was placed in the draft plan for the North Pacific Coast, which has far-reaching implications be it before or after the approval process.

Realizing the importance of *plan revision* in step nine of the MSP process, this regime in its next task sought to monitor and evaluate plan performance. To this end, experts were mandated to identify key performance indicators to monitor and evaluate plan performance in addition to data sharing and archiving public data, thereby seeking public opinion for monitoring and providing ecosystem-based monitoring training for First Nations as enshrined in the regional action framework. Although funds were secured for this kind of initiative, due to financial constraints for engaging other groups such as commercial and non-governmental organizations in the process, alternative actions were taken to review the fund generation medium so as to increase the existing capital to coordinate affairs of the additional groups and further provide civic education to encourage compliance (<http://msp.ioc-unesco.org/world-applications>).

applications, 2019). This is to conclude that the key performance indicators identified, have the potential of enhancing *research and development* in the management area and the initiative for civic education also stands the chance of encouraging compliance models. The figure below, provides a lucid illustration of the systematic approach to monitoring and evaluation.

Figure 25: The systematic approach to monitoring and evaluation. *Source:* (Ehler and Douvere, 2009).

As considered paramount in the systematic approach to monitoring and evaluation, two kinds of schemes are essential and these include an assessment of the management measures as well as an evaluation of the management plan. When considering such schemes, a set of criteria for assessing the performance of the management measures is essential as already executed by this regime. Following this, performance data will be needed for the evaluation which is observed to have engaged little consideration in the draft plan, including a biennial report indicating the performance of the management plan as demonstrated in Figure 25 above (Hassan *et al.* 2015).

Legal – Good regulatory process

In the first process of marine spatial planning, identifying the need for establishing an authority is fundamental and it requires a single legislative instrument for an effective output. In spite of that, the case of North Pacific Coast seem disoriented due to the cumbersome nature of maritime related legislative instruments at different levels of governance as discussed in Section 4.3. In view, the federal government, British Columbia and First Nations occupy independent authority making it complex to decipher which management authority possess full control over the entire North Pacific Coast. Such jurisdictional complexities explain why a tripartite governance structure between the federal government, British Columbia and First Nations was constituted to be guided by the 1996 Oceans Act for an effective output. This initiative in addition to the setting-up of both Science and Marine Advisory committees in particular, received enormous attention mainly due to its modish nature (www.pap-thecoastcentre.org, 2017). Candidly, such spatial process can be described as a *good regulatory process*, but what is underemphasized, is an empirical and vivid definition of which management authority the three main bodies represent. This comes in because an ideal MSP process takes into consideration the planning authority and the implementation authority. These two authorities may be combined under one umbrella, but recent practice demonstrates that most regimes do establish a planning authority, while the implementation is done by the concerned sectors (Ehler and Douvere, 2009). As highlighted in section 3.1., one more view is to engage sectoral steering committees to minimize the workload on the planning authority.

More so, due to the challenge of having to engage all sectors in the implementation process, it is desirable to employ an interagency task force and consider the adaptive management approach to assist individual sectors in learning from their experiences and addressing far-reaching implications prior to implementation.

Environmental – Satisfactory regional conflict prevention and integration

In the course of defining and analysing the existing conditions of the marine environment, in the year 2000, a Great Bear Rainforest Agreement (GBRA) between British Columbia, First Nations, forest entities and environmentalists was underway to set a new course for sustainable resource and environmental management, supporting nature, economies, and protecting natural values. This initiative led to the Pacific North Coast Integrated Management Area (PNCIMA) which facilitated the assessment of environmental risks and provided strategic goals and objectives for the Large Ocean Management Area (LOMA) as part of the 2003 Oceans Action Plan. In 2008, PNCIMA released a report on the “State of the Marine Environment” declaring over half of the Large Ocean Management Area of approximately 88,000km² ecologically viable. This report took into consideration ecosystem-based management issues, and the objective of the report was to create an integrated management framework for ensuring a healthy, safe and prosperous environment through collaborative means (<http://msp.ioc-unesco.org/world-applications>, 2019). Whereas the Large Ocean Management Area initiative helped to administer satisfactory *regional integration*, the operations of PNCIMA also helped in ensuring appropriate environmental assessment, whereas the Great Bear Rainforest Agreement gazetted in 2016, has the potential of *preventing regional conflicts*. As encapsulated in the fifth step of the planning process and debated in Sections 3.2 – 3.3., analysing current environmental conditions enhances our understanding about the human and non-human activities in the management area, mapping information, ecological values, environmental and oceanographic conditions, as well as the current conflict capabilities. Critical deliberation on this theory is given in greater depth in sections 3.2 – 3.3. Deducing that the operations of MaPP and PNCIMA deal with different issues of context, but complement each other.

The sixth step of the planning process on the other hand, addresses the general procedure for analysing future environmental conditions in the area. This step in detail, allow planners to visualize and create a sustainable environment for human uses and alternative ocean space for future use. In the course of action, planners are required to present a zoning document known as “spatial sea use scenario” to project current trends, estimate new demand for marine space, identify alternative future activities for the area and select the preferred scenario to inform policy decisions (Hassan *et al.* 2015; Ehler and Douvere, 2009). In the process of accomplishing these tasks, the Large Ocean Management Area spanning the Canadian-Alaskan Border, North Vancouver Island, south to Campbell River and Brooks Peninsula on the West of Vancouver Island, formed a steering committee comprised of federal, provincial and First Nations representatives, including an Integrated Oceans Advisory Committee to assist in acquiring ecological, geodetic, biodiversity, recreation, conservation and preservation area data for the region. In this development, the Enbridge Northern Gateway, a proposed pipeline and oil tanker project, offered construction of an 1178 km pipeline connecting Athabasca oilsands in Alberta and Kitimat. This initiative followed a Joint Review Panel constituted in 2011 to ascertain the environmental impacts of such a project. The evolution led to the development of spatial sea use scenarios which was completed in 2013 but failed to address several management scenarios. Critically, the document placed minimal emphasis on biologically and ecologically sensitive areas, and operational activities including commercial shipping, fishing, energy and so on, making it difficult to “project current environmental trends, estimate new demands for marine space, identify alternative future activities for the management area to inform policy decisions, and select the preferred scenario for the

management area”. This resulted in the failure of the management plan to meet its preliminary objectives, enabling Nanwakolas Council to retract its engagement with PNCIMA (<http://msp.ioc-unesco.org/world-applications>, 2019; www.pap-theoceancentre.org, 2017).

4.5. Conclusion on the MaPP spatial process

As witnessed in the case study, recent development on coastal and marine resource management in British Columbia can be said to represent the positive impact of numerous planning arrangements in the last three decades, and such planning arrangements in its broader scope ranges from municipal to Large Regional Marine Plans (LRMPs), where local strategies and integrated management plans have gained leverage in reaching a successful consensus. The planning arrangement at the preliminary stage could be said to have engaged the needed attention and momentum until the emergence of PNCIMA and its failure to meet the primary objectives of MaPP enabling Nanwakolas Council to retract its engagement. At the local level, the exertion of capacity and resilience by First Nations in building the regional action framework, however, complements the effort of stakeholders and can be replicated by modern regimes. Also included, is the tripartite governance structure involving the federal authority, provincial authority and local authority which also assisted in various capacities by bringing the plan to execution. The planning process, however, lapsed for approximately three and half years including an additional year and half for the implementation and its related treaties. As principal decision makers, the regional action framework in addition to the four sub-regional plans built within the framework of ecosystem-based management, relied on the services of a Marine Advisory Committee and a Scientific Advisory Committee including technical teams from various discipline. The multidisciplinary state of the plan in practice, emphasized the importance of ecosystem resilience and integrity, spatial zones and management strategies as well as human-wellbeing and its related actions. To address the identified strengths of the management plan as highlighted in *italics* within the body of analysis, likewise series of management weaknesses were equally identified. Notwithstanding, such weaknesses are addressed in light of the literature reviewed in the preceding chapters. To present the aggregate strengths and weaknesses of the analysed regimes, having now established a lucid background and critical assessment of the Marine Plan Partnership for the North Pacific Coast, the following section similarly debates on the background and critical assessment of the Eastern Scotian Shelf Integrated Management and addresses the identified weaknesses in the same light.

4.6. Background and introduction to the Eastern Scotian Shelf

Dating back from 1970 to the mid-80s, the government of Canada in its coastal and marine resource management agenda, took pertinent actions to ensure resource resilience and sustainable use of the ocean with a jurisdiction of approximately 5.87 million km². In a decade interval after the enactment of the Oceans Act in 1996, the marine territory under federal control extended from 0.43 per cent to about 0.51 per cent (GBC, 2007; Haward and Vince, 2008). In the process of achieving ocean sustainability, the 2003 Oceans Action Plan notes that the core principles of Canada’s integrated management was derived from the 1992 United Nations Conference on Environment and Development (UNCED – Agenda 21). This Agenda recognizes “broad public participation in decision making as a fundamental prerequisite for

achieving sustainable development”. The motivation in this Agenda, however, resulted in five regions being identified and prioritized for integrated management as enshrined in Phase One of the Oceans Action Plan and these include: the Eastern Scotian Shelf (ESSIM), the Pacific North Coast (PNCIMA), Placentia Bay and the Grand Banks (PBGB), the Beaufort Sea (BSIMP) and the Gulf of St. Lawrence (GOSLIM). The ESSIM initiative in particular, has been in progress in the last two decades and in 2007, it produced a spatial framework with wide-ranging objectives to assist the integrated management process (Government of Canada, 2007). The ESSIM management area was literally centred on a seascape of about 325,000 km² that occupy significant cold-water corals and sponges, biological and ecological features, heterogenic fish species and species like the North Atlantic right whale and northern bottlenose whale. The region possess a variety of human activities including shipping, fishing, oil and gas, defense operations and so on (Zwanenburg *et al.* 2006). With the aim of creating an integrated adaptive regional framework through collaborative effort for ensuring a good political, economic, social, technological, legal and environmental sustainability, the ESSIM initiative, which commenced in 1998 as a leading pilot program for the integrated management process, created an inception forum to execute the integrated management agenda. Subsequently, the uncertainty centred on the actual meaning of integrated management and how it should be conducted as well as the role of stakeholders were all questions being asked by the participants. In the absence of a national roadmap or a satisfactory blueprint to be modelled by this regime, participants attested that the initiative was a true learning experience (Chircop and Hildebrand, 2006). Figure 26 below, illustrates the geographic scope of the ESSIM management area.

Figure 26: The ESSIM Management Area. *Source:* Fahrenkrug and Rave, (2007).

As discussed below in segments, in the last fifteen years, the evolution of the ESSIM initiative have experienced cooperation challenges, consensus building tussle and trust issues among stakeholders (O’Boyle and Worchester, 2009; Foster, Haward and Coffen-Smout, 2005; Rutherford *et al.* 2005; and NRTEE 2007). In 2005 for instance, the draft plan entailing human use / ecosystem objectives and future management strategies was released for general comments. The exclusive provisional outcome of the draft plan merely encompasses the preservation of the *Lophelia* coral conservation area and the importance of a conservation plan

(OAG 2005). This follows the Regional Strategic Action Plan for ESSIM completed in 2007 and released in June 2008 unaccompanied by an approval from the Minister of Fisheries and Oceans. In seeking to advance the marine protected areas, fisheries and ecosystem-based management, environmental actor's such as the Canadian Parks and Wilderness Society, the Ecology Action Centre, World Wildlife Fund Canada and the Sierra Club of Canada, were actively involved in the process. This process in view provided the enabling environment for several entities to participate in environmental planning / zoning and mapping arrangement in the region with a more comprehensive cohesion as compared to the past (MacLean *et al.* 2009). The process led to the assessment of regional implications to the Oceans Act for the oil and gas industry due to the growing concern about the extent to which the Oceans Act constrains oil and gas development in the region; calling for the establishment of an institutional framework, policy and legal reform in addition to finding a *modus vivendi* for stakeholders in spite of the existence of the Oil and Gas Production and Construction Act of 1969 (Chircop and Marchand, 2001). One satisfactory legislation that championed such a course with minimal utility can be referred to the 1988 Newfoundland and Nova Scotia Offshore Petroleum Resources Accord Implementation Act, being managed by federal and provincial authorities. On alternative account, the potential of consolidating aquatic resource operations with the current regulatory framework in respect to the Oceans Act is an additional concern raised by the Canadian Association of Petroleum Producers (CAPP) (Chircop and Marchand, 2001). This brings to the fore the question of how several offshore activities can be managed within the framework of the Oceans Act. A challenge of this nature drew the attention of stakeholders to contend for a strategic scheme for developing maritime zones, MPAs and prioritizing significant areas of future use (Chircop and Marchand, 2001). In the process of scoping data for the Strategic Environmental Assessment (SEA) in 2005, one more concern was raised to ascertain the relationship between the ESSIM process and the regulatory arrangements under the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB). Wildlife Fund Canada intervened obliquely and indicated that there will be a moratorium on all petroleum exploration activities until the finalization and implementation of the ESSIM plan. This led to the next phase of the ESSIM process in 2008 being described as the development of action plans (Rangeley and King, 2005). According to MacLean *et al.* (2009), although this process was initiated for MPA planning, fishing and spatial conservation, it further incorporated marine spatial planning concepts and tools as a pedestal for regional cooperation. A number of participants in the ESSIM process at this stage expressed their desire in support of the regional spatial plan. Yet the primary concern was about the importance of clear driving priorities and specific mandates of the planning group to enable vigorous stakeholder engagement. DFO (2009) in its submission suggested that is not clear how marine spatial planning in this region can proceed given the uncertainty as to whether the plan is supplementing Canada's integrated management ideals, or if it's just a modernized ocean management approach without any premise in the contemporary legislation. This implies that in the view of DFO, marine spatial planning in the region is not persuasive as acknowledged by a number of industrial players as part of Canada's integrated management. MacLean *et al.* (2009) reveals the staggering extent to which the 2009 ESSIM symposium saw a unanimous consent to the realization of the regional marine spatial plan – mainly due to its practical nature of addressing a number of objectives outlined in the ESSIM Plan. To this end, DFO and the ESSIM Planning Office in collaboration with the conservation groups, concluded to form a sub-committee to develop a Spatial Conservation Action Plan worthy of representing the foremost phase of the plan. MacLean *et al.* (2009) notes that this process saw a series of data gathering and data sharing workshops in support of the integrated management process and advancing spatial conservation planning in the Eastern Scotian Shelf. In essence, the overriding goals of the Action Plan are to:

- a. Share skills and expertise among participants in-line with the theory and practice of spatial conservation planning, taking into consideration spatial zones earmarked for conservation purposes or spatial zones in possession of high conservation value.
- b. Examine the significance of existing management areas and identify relevant gaps in spatial conservation planning.
- c. Identify and prioritize spatial areas of conservation and recommend future actions.
- d. Administer and recommend operationalization and implementation of the plan.

The unlimited objectives of the Spatial Conservation Action Plan also seek to maintain the existing jurisdictional complexities, conserving community biological diversity, conserving habitat integrity, protecting species and reducing accidental mortality, enhancing consensus building, transparency and accountability, multi-sectoral conflict resolution, sustainable wealth generation, networking, inclusiveness, evolution, knowledge and data acquisition which are all encapsulated in the Oceans Strategy (Chircop and Hildebrand, 2006). Regarding the ESSIM governance structure, the principal composition included the ESSIM stakeholder roundtable – which is a 32 leading member planning group comprised of government officials, First Nations, maritime agencies, academia, community and conservation NGOs. Also the Regional Oversight Committee on Ocean Management (ROCOM), which is a senior executive forum mandated to oversee provincial and federal ocean related issues, a federal-provincial ESSIM working group with representation from the provincial governance machinery, a Stakeholder Advisory Council (SAC), the Department of Fisheries and Ocean (DFO), and the ESSIM planning office (Government of Canada, 2007). Remarkably, one of the uncertainties pertaining to the ESSIM governance structure is the growing concern about First Nations and their specific role in the Canadian governance order (MacLean *et al.* 2009). Figure 27 below provides the governance structure of the ESSIM management area.

Figure 27: The ESSIM governance structure. *Source:* Haward and Coffen-Smout, (2005)

4.7. Analysing the Eastern Scotian Shelf Integrated Management Plan (ESSIM)

Political – Satisfactory reg. integration, sustainable development and effective plan revision

At the pre-planning stage, experts filed a recommendation termed as the “Sable Gully Conservation Strategy” to protect the Eastern Scotian Shelf. This recommendation in effect, urged the minister of Fisheries and Oceans to announce the Eastern Scotian Shelf Integrated Management program which can be described as satisfactory *integrated* and *sustainable* development approach. This development led to the composition of ESSIM Stakeholder

Advisory Council to guide and advise leadership on the ESSIM process, in addition to a 32-member planning group constituted in 2008 to assist in developing the management plan (www.pap-thecoastcentre.org, 2017). In spite of a great deal of merits, this approach possesses particularly in the area of acquiring multidisciplinary knowledge, yet what was missing – is the specification of significant roles and expertise of the planning group and a categorical definition of their mandates and time-frame for the completion of each step of the process.

As presented in section 4.5, a series of fundamental goals were aligned by this regime, yet it appears that marine spatial planning practice in the Atlantic region is currently based on the articulation of Large Ocean Management Area goals and objectives which also serve as vague. Hassan *et al.* (2015) notes that ideal MSP goals and objectives are expected to take account of the implementation timelines including activities such as political, economic, social, technological, legal and environmental, in addition to the analysis of current and future conditions of the area. This task is conducted simultaneously with the management principles which may be derived from the Oceans Act for instance, cross-border agreement, regional Convention, national or continental Agenda as well as good practices across the globe. Although the ESSIM plan takes a strategic and multi-year approach with several participants engaged in the planning process, this research, however, notes that beside the development of the Strategic Action Plan in 2008, all other forums were held on a piecemeal basis leading to the failure of the Fisheries and Oceans Minister to approve the process. To spell out the management boundaries and zones, prior to the completion of the Strategic Action Plan, in spite of the contention raised by stakeholders for the prioritization of future zones and boundaries alternatively known as sovereign frontiers, this was least considered. Hassan *et al.* (2015) concludes that a joint development zone treaty and national legislation for delimiting maritime boundaries and zones may assist in addressing such gaps.

In consonance with the provisions in the Oceans Act and the power vested in the Minister of Fisheries and Oceans, the plan which is expected to be *revised* in each three year range, was granted an exclusive right in the care of the ESSIM Stakeholder Advisory Council, the ESSIM Planning Office and the Department of Fisheries and Oceans for implementation and enforcement. Notwithstanding the fact that this strategy may seem potentially viable, nonetheless, the plan at its completion phase experienced an abrupt failure in transition to implementation due to lack of political support as stressed in Section 4.6. Jay *et al.* (2016) assert that such inefficiency can also be attributable to policy deficits and the need to understand the key concepts of integrated management practice. Owing to this effect, this study essentially draws attention to a distinctive implementation and enforcement roadmap discussed in Section 3.5.8. Consequently, such implementation challenges handicapped the management plan in transition to the adaptation phase. This final phase of the MSP process aims at utilizing the evaluation results to explore alternative means of modifying and improving upon the regional action framework. Concluding that this process entails redevelopment of a new management plan known as the adaptation plan and identifies significant areas where research may be required to begin in the next round of planning (Hassan *et al.* 2015).

Economic – Limited specification to financial commitment

Obtaining financial support to execute TMSP programmes and activities is usually a challenging process. Although financial commitments were not specified by this regime according to www.pap-thecoastcentre.org (2017), it is assumed that a management plan at the implementation phase has incurred significant cost or expenditure during the planning process. This is due to the fact that TMSP in its practical sense, requires adequate financing. For this reason, it is recommended for the ESSIM management regime to consider the multiple financing approach as extensively elaborated in section 3.5.1 to assist in generating funds for

an effective output. Taking into account fund management strategies and the enabling conditions for future investment (Section 3.5.2).

Social – Effective coordination

In the application of regional MSP, an extensive integration and collaborative planning approach cannot be overlooked. Noted as one of the important tasks in the planning process, this regime in its collaborative effort adopted a multi-stakeholder approach by engaging almost every sector including shipping, fishing, oil and gas, aquaculture, mariculture, wind energy, military, ocean users, civil society organizations, technocrats and regulators to assist in the development and implementation of the Strategic Action Plan. It is worth noting that in spite of the inter-departmental rivalries between the federal government, Fisheries and Oceans Canada v. Environment Canada, the objectives of the plan was realized in 2008 with absolutely no commitment by the Fisheries and Oceans Minister despite the provisions made in Part 2 of the Oceans Act requiring the minister to “lead and facilitate development and implementation of plans for the integrated management of all activities in or affecting estuaries, coastal waters and marine waters”. Subsequently, the Department of Fisheries and Oceans *coordinated* effectively with technocrats, stakeholders and civil society to exploit expertise and data (<http://msp.ioc-unesco.org/world-applications>, 2019). As also mentioned in section 4.6, ‘the principal composition of the ESSIM stakeholder roundtable included a 32 leading member planning group comprised of government officials, First Nations, maritime agencies, academia, community and conservation NGOs, the Regional Oversight Committee on Ocean Management which is a senior executive forum mandated to oversee provincial and federal ocean related issues, a federal-provincial ESSIM working group with representation from the provincial governance machinery, a Stakeholder Advisory Council, the Department of Fisheries and Ocean, and the ESSIM planning office’. As mentioned in Section 3.5.3., the discussion provides that such coordination requires the development of a strategic management scheme for curtailing stakeholder engagement challenges at the pre-planning phase as witnessed in the practice of this regime resulting in departmental rivalries.

Technology – Desirable expertise, effective plan revision and productive research

In the process of preparing and approving the Strategic Action Plan, planners identified a set of management tools relevant for the preparation of an appropriate and effective plan. Implying that prior to 2006, some geographic information system tools for advancing the Action Plan was lunched to make room for ocean use and MPA network planning, conservation strategies, management and compatibility matrix of the area. To this end, the two management areas designated for MPA planning include the Gully which is a large ecosystem canyon on the edge of the Scotian Shelf as well as the Musquash Estuary, a highly prioritized coastal habitat found in the Bay of Fundy close to Saint John, New Brunswick. The plan at the preliminary stage stressed the importance of recognizing MSP challenges in the sphere of ecosystem-based management leading to multiple jurisdictional complexities and adaptation to the dynamic nature of the marine environment. Following a public consultation, ‘the exclusive provisional outcome of the draft plan merely encompass the preservation of the Lophelia coral conservation area and the importance of a conservation plan’. In 2006, the Regional Oversight Committee on Ocean Management endorsed the Strategic Action Plan. The outcome provided leverage for the Federal-Provincial ESSIM Working Group to complete the plan in 2008, clarifying the extent to which the working group took the crucial steps necessary for the development of a standard plan (<http://msp.ioc-unesco.org/world-applications>, 2019). Having now recognized the exhibition of *expertise* by this regime as testimonial, it appears that the essential measures for approving the Strategic Action Plan was undermined by the Department

of Fisheries and Oceans and the Oceans Minister which is why the plan has languished, and these measures entail taking account of management boundaries and maps, goals and objectives, and implementation timelines in addition to the identification of management measures using a set of criteria.

According to UNESCO (2019), the ESSIM Stakeholder Advisory Council was finally tasked to monitor and evaluate the plan, whereas the Federal-Provincial ESSIM Working Group were also requested to share information and data across sectors. Consummately, the mandate set forth by the ESSIM Stakeholder Advisory Council to monitor and evaluate the management plan can be described as an *effective plan revision* approach. More so the initiative taken by the Federal-Provincial ESSIM Working Group to share information and data, has the potential of enhancing *productive research* and knowledge across sectors. Acknowledging that evaluating a spatial management plan requires Environmental Impact Assessment (EIA) to mitigate future risks and environmental hazards such as that enshrined in the European Commission Sea Directive (2001/42/EC). This process also require a geologist to develop an assessment report using indicators such as the ecosystem, the ecology, biodiversity as well as the incompatibilities in the marine environment. Following this, if the primary indicators are satisfactory and capable of attaining the management goals and objectives, a group of scientific advisory committee, technocrats, maritime agencies and regulators may ensure a comprehensive review and approval of the management zones, boundaries and regulations, management measures, legislative instruments and protocols, organizational changes, e.g., new staffing, and financial capacity for the evaluation, monitoring and implementation of the plan (Ehler and Douvere, 2009).

Legal – Good policy and regulatory process

In 1996, Canada became the leading nation to enact legislation for integrated ocean management dubbed the Oceans Act. The exclusive provisions in this Act in effect, geared towards sustainable conservation, protection and development of the marine environment and further sought to establish marine protected areas to manage endangered species, important fishes and mammals as well as biologically and ecologically sensitive areas. This follows three management areas designated for MPA and these include the Gully, the Musquash Estuary and St Anns Bank. The Oceans Act, explicitly provides an array of maritime regulations for Canada's maritime domain. Two years after the enactment of this Act, the Minister of Fisheries and Oceans announced the Eastern Scotian Shelf Integrated Management Initiative which brought together a host of regulatory bodies from different levels of government. Following this development, legal practitioners were tasked to provide legitimate advisory services for the realization of the Strategic Action Plan (<http://msp.ioc-unesco.org/world-applications>, 2019). In extension this research notes that the *regulatory* provisions enshrined in the Oceans Act, in conjunction with the advisory services rendered by the legal practitioners, is a pedestal for a *good policy process*. In the practice of this regime, although a planning authority was convened in application of the Oceans Act as demonstrated in section 4.6., yet what was critically undermined, is an implementation authority and the identification of future conflict capabilities which later materialized and ruined the fortunes of Nova Scotia province leaving the draft plan in limbo. Ehler and Douvere (2009) adds that one other missing element is a precise location of marine activities which engaged minimal emphasis in the Oceans Act. This task is indeed necessary because many countries face incompatible or conflicting marine activities following implementation. One example can be referred to the Belgian-German conflicting location of an offshore wind energy facility. A similar incident occurred in Australia between the 1960's – 1970's. With this issue, the spatial management plan was implemented without the consent of the public and the stakeholders. This development caused the oil drilling and limestone mining activities to conflict. The preceding argument implies that prior to the

enactment of MSP related legislation, zoning arrangements are expected to be addressed in the legal provisions in order to avoid ensuing challenges as experienced by other regimes.

Environmental – Desirable expertise for productive research and sustainable development

Defining and analysing the existing environmental conditions of the ESSIM area, cannot be overlooked in the MSP process as this task sets the platform for ascertaining the actual environmental conditions of the area. In the ESSIM management area, at the period of mapping important areas entailing human activities and identifying spatial conflicts compatibilities in 2005, GIS support tools were employed for the determination of environmental impacts and potential user conflicts. The approach on the other hand, assisted in developing a series of objectives to enhance ocean-related activities, services, training, education and infrastructural development. In advancing the strategic action plan for the Eastern Scotian Shelf, this process ultimately saw a series of data gathering efforts in support of the integrated management initiative. The four principal objectives governing such activity geared towards maintaining resilient ecosystem, addressing conflicts compatibilities, minimizing and diversifying ocean use and limiting the cumulative effects of human impacts in the ESSIM management area (<http://msp.ioc-unesco.org/world-applications>, 2019). In the perspective of this research, such initiative candidly serve to illustrate *productive research and development* not only for the planning group, but for the entire region. As data acquisition and usage is considered germane to environmental analysis in the MSP process, section 3.2 and 3.2.1 essentially elaborates to a large extent the importance of GIS support tools for the identification of mapping information. Tackling this issue in broader perspective, experts such as Ehler & Douvere, (2009) and Hassan *et al.* (2015) affirm the significance of utilizing the acquired data for the preparation of management zones with an illustration of the topography, oceanography and the geomorphology of each zone. Following this, a valuation is estimated to ascertain the value of conservation and sustainability of the entire management area as presented in Figure 28.

Figure 28. Marine areas with high ecological values. *Source:* Lindeboom et al., (2005).

To this end, the final task is to define and analyse future conditions of the area by identifying future demands for ocean space, identifying alternative spatial scenarios and selecting a preferred scenario. The debate in section 4.6 in essence, underscores the importance of identifying future demands for ocean space which was envisaged by several stakeholders at the preliminary phase of planning – consequently probing how several offshore activities can be managed within the framework of the Oceans Act. The exclusive outcome of such concerns,

was the provision of a strategic scheme for the development of maritime zones, MPAs and prioritization of biologically and ecologically sensitive areas. In consolidating this effort, 'DFO and the ESSIM Planning Office in collaboration with the conservation groups formed a sub-committee to develop a Spatial Conservation Action Plan worthy of representing the foremost phase of the plan'. Adding that the exhibition of such *desirable expertise* for *sustainable development*, experienced transition to the next phase of planning. In the presence of this achievement, what was observed as a missing link, is the identification of alternative spatial scenarios and the selection of a preferred scenario. Critically, a spatial weakness of this nature cannot be assumed as exceptional as a similar shortfall was observed in the case of the North Pacific Coast in Section 4.4. In addressing this shortfall, a considerable theory has been dispersed in sections 4.3 and 4.4 which additionally facilitates a universal roadmap for identifying alternative spatial scenarios and selecting a preferred scenario.

4.8. Conclusion on the ESSIM spatial process

This chapter has delivered a thorough interpretation and analysis of the two selected regimes and per the analysis and deliberations witnessed in the case of the ESSIM management regime, it is evident that this regime has chalked a number of successes ranging from the enactment of Canada's Oceans Act in addition to the composition of the ESSIM planning and governance office. Further noting that beside the existence of management goals and objectives and stakeholder engagement in the ESSIM region, a series of collaborative efforts was made to accomplish the integrated management initiative envisaged. One more success achieved by this regime, is the creation of management zones and MPAs which also saw a number of experts in the data collection process. Giving that, such a favourable outcome has the capacity of leading this regime to a triumphant end, the research also acknowledges that a number of features included in the ESSIM planning process created multiple challenges not only for the working group, but for the entire Nova Scotia province. Such challenges were not limited to the local and provincial governance machinery but adversely affected stakeholders and ocean users plying that territory. Indeed the identified challenges are practically linked to the failure by the Fisheries Minister to endorse the plan, which merely encompass the objections raised by the government of Newfoundland and Labrador concerning their overlapping boundaries in addition to interdepartmental rivalries. Alternative perspective suggests that since inception, this region has been in deficit of implementation policy and the need to understand the essential concepts of integrated management. The planning process, however, lapsed for approximately ten years including additional six years for the implementation process. In contrast, this chapter emphasizes the degree at which the analysis revealed some significant strengths and weaknesses of the analysed regimes as proposed by objective three of the study. Within the body of analysis, the derived concepts, propositions and a host of references employed, were drawn from Ehler and Dove's (2009) step-by-step approaches to ecosystem-based MSP – helping to justify the possibility of translating unilateral MSP to multilateral approaches. Such propositions in view, does not only seek to address the MSP challenges in the North Pacific Coast or the Eastern Scotian Shelf per se, but also for the anticipated challenges ahead of the planning and implementation of the Mami Wata MSP Pilot Project in the GoG marine region.

4.9. Evaluation of the analysed regimes

In-line with the analysis conducted in this chapter, a performance observation was carried-out using a series of italicized texts to observe how the selected regimes are achieving the analytical themes outlined in Section 4.2.1. Subsequently an evaluation was conducted in this section using the analytical themes as Performance Indicators (PIs) to ascertain the functional strengths and weaknesses of the analysed regimes as presented in Figure 29. Justifying that these themes, was developed in accordance with the theoretical insights in Chapters 1, 2 and 3 as well as the experiences and contributions from experts and stakeholders around the world. Indeed, these global experiences and contributions were presented to the European Commission in a form of a report. This report was used as a benchmark for the development of the Rhode Island Ocean Special Area Management Plan released in 2017 (See, <https://oct.to/OC726>, 2017).

Figure 29. Evaluating the performance of the analysed regimes (Derived in this research).

Having this information, the results are converted into percentages using each PESTLE tool in the key criteria against the number of Performance Indicators as presented below.

Example: $\frac{\text{Political} \times 100}{\text{No. of PI's}}$ i.e., $\frac{6 \times 100}{12} = 50\%$

Figure 30. Evaluation results.

4.10. Interpretation of the evaluation results

Considering the regional planning and management challenges confronted by North Pacific Coast and Eastern Scotian Shelf, and the relevant mechanisms applicable for mitigating, particularly the cumulative impacts on the marine environment. An evaluation have been conducted in Section 4.9., which reveals that the spatial management process administered by ESSIM and MaPP, experienced some substantial lapses pertaining to financial resource management, validation of strategic goals and objectives, plan revision, productive research and investment, sustainable development, conflict prevention and regional integration. In spite of the fact that the identified lapses, conjunctively dovetails into the recommendations rendered in chapter three for addressing the emerging TMSP challenges, the identified lapses as well demonstrates insignificant overlap between the two analysed regimes. Conversely the green marked areas displayed in the performance diagram, generally indicates the functional strengths of both regimes. In-line with the demonstrations in the said diagram, it emerged that political and environmental practices, denotes the management strengths of the analysed regimes, whereas social and legal practices, also denotes the management weaknesses of the analysed regimes. In the application of similar parameters, such outcome, is nearly a general reflection of an aggregation of analysed regimes external to this research. This demonstrates that the study objective three, which seeks to analyse TMSP practices and uncover their functional strengths and weaknesses in the world over, is accomplished in that respect. In the drive towards excellence, the Gulf of Guinea marine region may as well tap some considerable lessons from the identified weaknesses in the ESSIM and MaPP management regimes so as to side-step ensuing challenges.

In the spirit of ensuring that the insufficiencies that plague TMSP practice are mitigated to the barest minimum, in transition to the next chapter, the discussion seeks to address some significant underemphasized dimensions of transboundary marine spatial planning uncovered in the anlysis conducted in this chapter as well as the earlier Chapters. In a bid to demonstrate the sources of the derived underemphasized dimensions, this chapter and divers sections of the earlier chapters, attempts to highlight the derived sources. In spite of the segmental deliveries of these under estimated elements of TMSP, an extensive debate is administered on each segment in the subsequent chapter to augment the existing knowledge as theory demands.

Chapter Five – Underemphasized Dimensions of TMSP

5.0. Overview

This chapter in view, aims at deriving additional tools to improve on transboundary marine spatial planning practices. To achieve this, the analysis conducted in chapter four and the preceding chapters, assisted in identifying significant underemphasized dimensions of transboundary marine spatial planning. This novel concept, is termed in this research as ‘reasoned theory,’ and shall be critiqued to enable better understanding about the derived propositions, definitions and concepts. According to Behrens and Rosen (2012), critique is a systematic way of examining a reviewed literature in order to determine specifically what assumptions underlie the argument, what issues are overlooked, and what implications are drawn based on the observations of the researcher. This implies that when critiquing, it is imperative to follow a process that requires your personal response and evaluation of what you observe. King (2010) reiterated that observations and imaginations i.e., circular reasoning, as well as assumptions with evidence i.e., logical facts, are stronger than the existing knowledge. This also calls for the need to revisit the derived concepts, definitions and propositions to ensure whether they correlate with the underpinning literature. Boushey & Moser (2009) hinted that revisiting research concepts requires one to constantly monitor meaning and industrial jargon used to ensure whether they correspond with the underpinning literature. This approach helps to address any inconsistency that may arise, and ensures that the derived concepts, definitions and propositions are appropriate and can be learned for future practice. Table 11 below provides a checklist of the significant underemphasized dimensions of transboundary marine spatial planning uncovered in the preceding Chapters.

Table 11: A checklist of the significant underemphasized dimensions of TMSP identified in this study.

1. Prejudice towards traditional / local knowledge	2. Leveraging human and institutional capacity
3. The role of an oversight advisory council	4. Incorporating transfer of marine technology
5. Significance of contingency planning	6. Emphasizing effective communication
7. Balancing spatial outcomes	8. Mapping jurisdictional boundaries

5.1. Prejudice towards traditional and local knowledge

In the process of deriving additional insights capable of addressing significant challenges confronting TMSP practices, the fourth chapter interrogates some considerable theories by Ehler and Douvère’s (2009) step-by-step approach to ecosystem-based MSP and Hassan *et al.* (2015) transboundary marine spatial planning approaches. Smythe (2017) emphasizes that to uncover practical answers for overcoming contemporary cross-border planning and management challenges, scientific input alone cannot seek to tackle all the fundamental hurdles in our social setting. This implies that in the utilization of vast scientific knowledge in this current era, the traditional method known as ‘lore’ approaches, may no longer be fitting. The scientific approaches, which stemmed from the preceding era of science and technology, are philosophically driven, require adequate data, time, money and acquiring such knowledge in the sphere of TMSP is spearheaded by geospatial data and analysis (Flannery *et al.* 2016). There are further concerns that TMSP tools are more focused on western science as reflected in the theories in chapters 3 and 4 rather than the traditional knowledge (ibid). Colorado (1988) adds that using western science as the only decision making tool, barely reflects the result in

other jurisdictions due to cultural disparities, religious beliefs and legal connotations. Hence, scientific predictions and findings in such jurisdictions have led to more discrepancies arising from political initiatives and divergent social and cultural views. This may be seen to reflect the alienation of the public with often little or greater sense of apathy demonstrated in addition to strong opposition to scientific decisions. Flannery *et al.* (2016) reiterates that although TMSP tools and concepts have the capacity of managing multiple uses of the ocean in respective jurisdictions, yet, its application may differ from one management area to the other, and thus MSP data and analysis precludes the significance of traditional and local knowledge. As such, scientific input in itself must act as a supporting mechanism, instead of broadly tackling fundamental challenges in the world over (Gentner and Jeziorski, 1993).

In contrast, traditional knowledge, in its practical sense, plays a crucial role in achieving sustainable resource and ocean management goals (Berkes *et al.* 2000). This evolving kind of knowledge is collective in practice with adaptive values for succeeding generations, and its cultural significance enhances indigenous relationship in addition to its ability to cope with current and future environmental conditions (Berkes *et al.* 2000). There is also another body of knowledge which often creates the misconception to represent traditional knowledge, and this body of knowledge is known as the local knowledge. According to FAO. (2004), local knowledge is practically based on the present environmental conditions and it is developed over time through a number of local insights and experiences with much needed familiarization of the environment. This implies that the distinctiveness and significance of local and traditional knowledge cannot be replicated by neither academic nor conventional western science. In spite of the fact that each has its own *modus operandi*, they complement each other in achieving a common goal. Noting that both local and traditional knowledge apply a more proactive approach to addressing environmental issues whilst conventional science tends to address issues through categorical and empirical elaborations (FAO. 2004). Mazzochi (2006) adds that by considering the three composites of knowledge and its application, it provides a vast opportunity for the advancement of TMSP knowledge and promotes local engagement. One practical example, is the Marine Plan Partnership for the North Coast of British Columbia, Canada, which held its symposium in 2015 by engaging a number of local actors with an impressive range of varying views and complementary goals to advance the current state of the regional action framework (McCann. 2016). In a related development, the Eastern Scotian Shelf Integrated Management process also recognized the importance of engaging First Nations for local knowledge acquisition which in-effect, assisted in improving upon the input of data inventory (Government of Canada, 2007). These results demonstrate that giving ears and voice to indigenous people, promotes traditional and local insights and further assists in reaching complementary goals. As an expert delegate for the Mami Wata MSP planning process, empirical evidence suggests that both planners and policy actors, defy the significance of traditional and local knowledge in the planning process. Scientific information on the other hand, informs habitat characterization in addition to biologically and ecologically sensitive areas, and its deprivation, may however offset TMSP planning and practice particularly in the affairs of consensus building as witnessed in the case of the ESSIM planning and management process in section 4.6. This also implies that lack of understanding and unavailability of scientific information can greatly influence the momentum of a management plan. WeAdapt. (2015) further notes that if contracting parties engage differing views and understanding due to the absence of scientific information, primary solutions do not surface. In the case of the Marine Plan Partnership for the North Coast for instance, the planning group incorporated both local and traditional knowledge and a vigorous scientific input to complete the four sub-regional spatial plans as stated in Section 4.3.1. This demonstrates that effective dissemination of scientific, local and traditional information influences greater data acquisition and augments cooperation in the planning process.

5.2. Mapping jurisdictional boundaries

Defining appropriate jurisdictional boundaries is of prime importance to TMSP regimes in their quest to avert overlapping entitlements; and thus jurisdictional complexities on many accounts are characterized by lack of political scrutiny and ineffective boundary setting (Gilliland and Laffoley, 2008). This assertion is justified by the debate in section 4.7 which revealed that, in spite of the contentions raised by stakeholders, the political process of the Eastern Scotian Shelf failed to appropriately spell out the jurisdictional boundaries prior to the completion of the Strategic Action Plan. Such contentions were later brought to the fore by the government of Newfoundland and Labrador which led to the failure by the Fisheries Minister to endorse the plan. Paasi (2005) affirms that jurisdictional complexities, as we have always known, are also triggered by the existing traditional boundaries and on many occasions they constitute a high degree of maritime-based conflicts worldwide. Indeed, the complexity of Ghana and Côte d'Ivoire's maritime boundary dispute served as an excellent illustration to such hurdles. One other obstacle that requires much attention, is the geographic and political elements of boundary setting. For example, the boundary between Ghana and Togo, as discussed in section 1.1., engaged a long-standing dispute due to the cumbersome nature of the geographic and political elements and natural resource potentials of the area. In reality TMSP requires two types of spatial boundaries and these include the jurisdictional boundaries discussed in section 2.1., and spatial zones which are developed through the TMSP process. Mapping jurisdictional boundaries which are mostly considered paramount in the TMSP process, may seem logically straightforward, but this is not the case in practice. One example can be referred to the boundary dispute between Ghana and Côte d'Ivoire as deliberated upon in section 1.2 following ten unsuccessful attempts at reaching a bilateral agreement. In this case, the goal of mapping jurisdictional boundaries was achieved through an Order prescribed by the Special Chamber of ITLOS on 23 September 2017, following a strategic partnership agreement signed on 17 October 2017 for the implementation of such Orders (Section 1.6). As observed in the above list of examples and seconded by Monahan *et al.* (2000), jurisdictional complexities, do aggravate mostly as a result of an interest in natural resources. This suggests that in boundary setting, economic interest generally overrides social interest due to the enormous emphasis often being placed on natural resources, disenfranchising the significance of social interest (St. Martin and Hall-Arber, 2008). In relation to natural phenomenon, other challenges confronting jurisdictional boundaries are fish and mammal migration patterns, natural disasters and sea level rise which are uncontrollable and compromise the effectiveness of the aligned boundaries (Ehler, 2008). Therefore the assumption that boundary maps have the potential of addressing natural occurrences is highly flawed. For instance, a boundary map may create the notion that it is secured and perfect for managing natural predicaments which in actual fact it is subjected to nature irrespective of the delimitation method used in the mapping process (Brennan and Smith, 2012). To mitigate such natural and human predicaments and provide future contingencies, Ehler and Douvere (2009) recommend the provision of good management measures and below is a summary of the four main types of measures being practiced across strata:

- Output measures specifying contingencies for natural occurrences such as fishes and mammal migration pattern, disasters and sea level rise.
- Input measures specifying the exact human activities in the management area.
- Process measures specifying the best materials and good environmental practices.
- Spatial and temporal measures specifying where and when marine uses should occur.

This process also allows for a rigorous environmental assessment to ascertain the ecological impacts and values as well as spatial and temporal heterogeneity of human uses as elaborated in sections 3.2-3 (Fischer, 2007; 2010). Such approach in effect, contributes to the effective

realization of ecosystem-based management principles and enhances the effectiveness of the planning process (Dalton and Di Jin, 2010). Ehler and Douvere (2014) concludes that in the spatial development process, it is only feasible to control the physical activities occurring in the marine environment and manage potential predicaments, not to change the natural occurrences.

5.3. The Role of an Oversight Advisory Council

In section 4.3.1 and 4.6., the political process of MaPP and ESSIM stressed the significance of their Advisory Council's constituted to merely provide guidance for leadership on each phase of the planning process. Pursuant to Arts. 145 and 157 of the Convention, the establishment of an appropriate Council is recommended to take account of oversight responsibilities to ensure successful formulation and implementation of management plans. In accordance with Art. 164 of the Convention, the Council shall constitute an Economic Planning Commission to manage accumulated funds as debated in Section 3.5.2. A practical example of such Oversight Council is the Regional Oversight Committee on Oceans Management (ROCOM) which operated during the ESSIM planning process, Ricketts & Harrison (2007), but failed to spell-out such management measures – helping to dwindle the fortunes of the Regional Action Plan. On the contrary, Hassan *et al.* (2015) shares that transboundary marine spatial planning practically aims at using single-sector authorities or Councils to take decisions towards implementation of management plans, and practical examples can be referred to the republic of Netherlands, Germany and Belgium. According to IOC (2015), another way of implementing a marine spatial plan is to consider the mixed approach. This approach works by conferring partial powers to a national or a regional Council and partially through single sectors. For the purpose of sustainability, such an implementation process further requires environmental and operational quality standards to help achieve the overall management goals. These well-defined standards and requirements makes it easier for each sector to meet the expectations of consumers and adds value to the spatial management process based on the activities and initiatives carried out by each Standard Development Sector (Mendel, 2002; De Oliveira Matias and Coelho, 2002). To this end, the Council is expected to access, promote and protect the standards developed and enhance the value chain. It is also worth noting that inappropriate sectoral coordination, may challenge the effort of the Advisory Council (Ibid).

5.4. Leveraging human and institutional capacity

In this study, the phrase 'conducive environment' refers to human and institutional capacity for undertaking TMSP programs and activities, and a considerable amount of such capacity is derived from precursory experience in integrated coastal zone management practice (Gee *et al.* 2004). In the practice of transboundary marine spatial planning, human and institutional capacities include having qualified personnel, robust political mechanisms, appropriate stakeholder engagement, adequate funding and strong management legislation which are indeed essential for good future outcomes (Olsen, 2003). Olsen, in this 2003 paper, further notes that even in the face of appropriate regulations and policy framework, management plans seem to exist on paper, making room for a huge implementation gap. In the ESSIM management regime for instance, in spite of the composition of a 32 member planning group

in addition to a stakeholder engagement group, provision of adequate funds, policy framework and the existence of management legislation, an inter-departmental rivalry exacerbated between the federal government, Fisheries and Oceans Canada and Environment Canada, which later became the bane of this regime and impeded the progress of the spatial management process as deliberated in Section 4.7. A challenge of this nature demonstrates a significant lack of integration of lessons learned from the past into the current planning approaches (CRC. 2016). Through the MSP conference held at the University of Rhode Island in 2015, experience shared among participants signify that applying precursory lessons, has the potential of avoiding implementation challenges and enhances trust which is seen to be dependent on building pre-existing relationships among authorities, stakeholders and the planning group (CRC. 2016). As observed in the stakeholder engagement practice of the Marine Plan Partnership for the North Coast, the MaPP regime recognized the essence of applying precursory lessons to deepen its implementation effort which yielded satisfactory results and assisted in building good relationships between stakeholders and the planning group (Section 4.4). One other example stressing the importance of pre-existing relationships and trust building can be referred to the MSP process in San Francisco Bay which touched on the subject dubbed “don’t meet them for the first time in crisis” (Andrescavage *et al.* 2016). In its quest to side-step ensuing challenges, the San Francisco Bay area earlier engaged maritime agencies including ferry owners, coast guards and the cargo industry in a preliminary communication with high degree of collaboration prior to the MSP process, and such good working relationships provided a solid foundation for the planning and the implementation process (Andrescavage *et al.* 2016). Noting that engaging skilled personnel, strong political mechanisms, stakeholder engagement, adequate funding and legislative underpinning cannot be undermined in the TMSP process, yet they are collectively seen as a single human and institutional capacity. Concluding that historical lessons of other management regimes, effective communication and relationship building additionally serve to address the implementation hitches. This also implies that human and institutional capacities, do not only take account of the consensus building and its operating procedures, but draws on divergent views, skills and expertise from engaged parties and thus provides the enabling environment for consolidating the potentials of TMSP regimes.

5.5. Significance of contingency planning

A contingency plan is an action plan tailored to assist in preventing future hazards. This plan is sometimes referred to as “Plan B” because it serves as an alternative plan if the expected results of the actual plan fail to materialize (Dearden *et al.* 2003; Selvin, and Buckingham Shum, 2002). Formulating a contingency plan is a national obligation in fulfilment of Art. 242, para. 2 which stipulates that, “without prejudice to the rights and duties of States under this Convention, a State, in the application of this Part, shall provide, as appropriate, other States with a reasonable opportunity to obtain from it, or with its cooperation, information necessary to prevent and control damage to the health and safety of persons and to the marine environment”. Art. 199 further stressed that “in the area affected, in accordance with their capabilities, and the competent international organizations shall cooperate, to the extent possible, in eliminating the effects of pollution and preventing or minimizing the damage. To this end, States shall jointly develop and promote contingency plans for responding to pollution and other incidents in the marine environment”. According to EPA (2010), the OPRC Convention also enables littoral states to cooperate and provide bilateral or multi-lateral assistance to other parties signatory to the Convention in case of oil spill incidents, and further

ensure that oil pollution incidents are reported to competent authorities as well as the International Maritime Organization (IMO) as appropriate. Art. 230, para 1 of the Convention added that, “if the violation is committed beyond the territorial sea, monetary penalties only may be imposed. As an exception, non-monetary penalties are allowed in cases of violations committed by foreign vessels in the territorial sea causing a “wilful and serious act of pollution” Art. 230 (2). Over the years, major catastrophes and oil spill incidents in the marine waters have necessitated the need to enact and amend old and the new legislations to assist in preventing future hazards. As a result, the current management trend has now placed emphasis on effective response mechanisms for preventing and controlling future hazards, Gennaro, (2004), and one good example can be referred to the 2019 Grand Bassau Protocol on Pollution from Land-based Sources and Activities by the Abidjan Convention in the Gulf of Guinea (<https://abidjanconvention.org>, 2019). In this marine region, the 2017 COP 12 Conference held in Abidjan revealed an enormous accumulation of spilled oil which indeed required an effective response prior to the development of the spatial management plan christened as Mami Wata MSP Pilot Project. Gennaro (2004) adds that contingency plans do not only serve the interest of a single hazard, but also addresses a number of catastrophic scandals in the world over. Such contingencies, could as well gear towards preventing spatial planning and implementation challenges, particularly the stakeholder engagement process often grappled with future uncertainties in addition to the unanticipated offshore operational or marine-use mismatches confronting urban and regional planning. The preceding argument helps to highlights a host of environmental and operational hazards in Figure 31 in critical need of contingencies.

Figure 31. Marine environmental and operational hazards in need of contingency plans (Derived in this research).

With reference to the political process in the MaPP region, the argument in section 4.4 underscored the extent to which “environmental and operational hazards remain a growing concern as a result of ineffective response mechanisms”. Calling for the need to consider future environmental risks and develop effective contingencies for preventing ensuing challenges. According to Stevens and Aurand (2008), a continuous cycle of planning, training, exercising, evaluating and improving a plan, is an indication of stakeholders’ commitment to sustain the plan. This means that in the sphere of transboundary marine spatial planning, a contingency plan is as good as a plan which has successfully been implemented and maintained with the commitment of all the stakeholders involved in the planning process. McKenna *et al.* (2008); and Maguire *et al.* (2011) acknowledges that in TMSP, stakeholder engagement is also an essential tool in contingency planning and it requires effective communication and dialogue with civil society organizations and the private sector. This suggests that it is imperative for policy actors to collaborate with the concerned sectors and entities to implement the

contingency plan (Selvin and Buckingham, 2002). Indeed, the support of the private sector and the engagement of relevant administrative bodies cannot be undermined since external ideas, programs and plans set the context for the accomplishment of an ideal management plan (Ngoile and Linden, 1997). These administrative bodies and agencies are expected to have previously been engaged in either local, national or regional administrative roles in order to help achieve the appropriate management goals. These bodies may include the Environmental Protection Agency, the Ministry of Environment Science and Technology, Ports and Harbours Authority, Maritime Authority; Shippers Authority, Fisheries Commission, Petroleum Commission as well as other agencies who are not directly involved in the management and development of the contingency plan but provide funds in the event of hazards. Notwithstanding the security agencies that play a crucial role by ensuring security and safety in the event of hazards. Heinrichs (2007) and Karkkainen (2004) further highlight the significance of engaging the aforementioned authorities and entities in the contingency planning process as enshrined in Art. 145 of the Convention. This Article provides the necessary measures for the authorities in accordance with the Convention to ensure effective protection of the marine environment from harmful effects through the provision of appropriate rules, regulations and procedures for inter alia:

- a. Preventing, reducing and controlling pollution and other hazards in the marine environment, including the coastline, with particular attention being paid to harmful effects on activities such as drilling, dredging, excavation, disposal of waste, construction works, maintenance and installation of pipelines and other devices related to such activities;
- b. Protecting and conserving the natural resources of the area and preventing damage to the flora and fauna of the marine environment.

Art. 146 of the Convention additionally directs the authorities to take necessary measures to ensure effective protection of human life and adopt appropriate rules, regulations and procedures to supplement the existing international law as enshrined in relevant treaties.

In the contingency planning process, one major task is to accommodate other activities in the marine environment. Pursuant to Art. 147 para. 1 of the Convention, a national or a regional contingency plan must ensure that all activities carried out in the marine environment recognize the importance of the other. Para. 2 (a-e) emphasizes that installation of mechanical equipment in the marine environment, such as mining and dredging devices, wind turbines and cables, gas pipelines as well as oil rigs, needs to be regulated in accordance with the procedures in the Convention. In the Gulf of Guinea marine region for instance, Arts. 13 of the Abidjan Convention's Protocol for Co-operation in the Protection and Development of the Marine and Coastal Environment of the Western, Central and Southern African Region stipulates that, "each contracting Party or State shall endeavour to include an assessment of the potential environmental effects in any planning activity entailing projects within its territory, particularly in the coastal areas that may cause substantial pollution of, or significant and harmful changes to the Convention area. The Contracting Parties or States shall, in consultation with their local authority, develop procedures for disseminating information concerning the assessment of activities. As part of their environmental management policies, the Contracting Parties or States shall develop technical and other guidelines to assist the planning of their activities in a manner that will minimize harmful effect on the Convention area". In this section, the lessons learned on the significance of contingency planning, has revealed that inadequate contingencies stand the chance of addressing minimal risks, whereas inappropriate contingencies also have the potential of intensifying future environmental hazards. It was also noted that in transboundary marine spatial planning, the appropriate engagement of stakeholders in the contingency planning process, consequently promotes the degree of external knowledge or input to advance the course of planning.

5.6. Balancing spatial outcomes

In the practice of transboundary marine spatial planning, the aim of achieving a balanced and equitable outcome is invariably perceived as prospective and promising in intent, yet the spatial process is often subjected to external influence by the political class and economic interests (Hassan *et al.* 2015). Such impediment in effect, create unequitable outcomes and discounts the value of ecological and social interest (Ibid). Flannery *et al.* (2016) emphasize the fact that even in the presence of a distinctive roadmap for a spatial process, governance and economic interests tend to undermine environmental and societal needs, and this runs the risk of plans being driven by a set of individuals to the detriment of ‘socio-ecologic’ amplification. In such situations, planning effort is often put to risk while management decisions are being dominated by the political class and inevitably favour economic growth (Jones *et al.* 2016). In section 4.4 for instance, the political analysis revealed that in the crafting of regional plans, planning groups, stakeholders and civil society members recurrently tend to disagree on procedural rules, goals and objectives due to the enormity of political and economic interest, and such contentions critically impedes the efficiency of the planning process. As such, management plans may comprehensively be crafted to focus on a more sustainable output, yet they solely reflect the present objectives and fail to balance the primary needs of ocean users, civil society and stakeholders (Flannery *et al.* 2016). Section 3.5.4 further “shares the epistemological connotation to unequitable outcomes, stressing that it is rarely unconventional across domains to treat all stakeholders as equal, which therefore affects consensus building by paving the way for different levels of organizational influence”. Jones *et al.* (2016) emphasize the magnitude at which an array of such political interests differ from one regime to the other due to cultural and social disparities. One practical example of such political interest can be referred to the kingdom of Belgium and its adherence to the European Union’s Directive for achieving 20 per cent offshore wind energy generation by 2020. Although this Directive since 2009 has impacted greatly on energy generation in the European domain, the Belgian part of the North Sea sought to augment its marine protected areas as a means of limiting the volume of wind energy generation from 20 to 13 per cent with a production capacity of about 2.1 GW (Green and Vasilakos, 2011). This action essentially leads to the classification of wind energy as a primary focus overridden other important goals (Jones *et al.* 2011). To side-step political influence of this nature, Flannery *et al.* (2016) emphasizes the importance of understanding the motivations behind each planning objective and the ability to balance spatial outcomes towards respective sectors. Adding that if TMSP goals and objectives are designed to foster ecological emphasis and future implications in consonance with existing legislation, and with the intention of providing optimum balance for ocean users and civil society, the possibility of overriding the process by the political class can be mitigated. As a means of restoring ecological integrity, an alternative perspective emphasizes the importance diversifying and connecting species habitat from various jurisdictions (Foley *et al.* 2010). In this process it is obvious to assume that in place of stringent parameters, a limited effort is required in restoring ecological integrity so as to satisfy user and societal interest, but that is always not the case. In an effort to reach ecological goals in California for instance, a network of marine protected areas were created with the exclusion of recreational angling, defying user and societal interest (Flannery *et al.* 2016). A subsequent justification by the planning group indicates their interest in mitigating fishing pressures which resulted in a socio-economic downturn. The fisher folks later expressed their earlier confidence in the regulatory system which was never anticipated to cause undue burden, upon which the civil society members also felt that the significant trade-offs between ecological consideration and its economic downturn for the fishing industry is virtually inequitable (Gleason *et al.* 2013). Stakeholders additionally probed the uncertainty surrounding the ecological benefits from such operations (Gleason *et al.* 2013). The preceding argument

helps to conclude that be it political, economic, social and environmental, balancing spatial outcomes through management goals and objectives is inevitably deemed as one of the driving forces of transboundary marine spatial planning. Yet what is critically demanded is underpinning legislation that entails ecological emphasis and considers future implications.

5.7. Incorporating Transfer of Marine Technology

Transfer of Marine Technology (TMT) is a process of exchanging technical and scientific information to enhance commercialization and development (Glass and Saggi, 1998). This process typically involves identifying and protecting new technologies through patents and copyrights, formulating new technologies and commercialization strategies, recognizing new discoveries in compliance with the Convention and generating revenues to support new discoveries / research and development programs. In the accomplishment of these tasks, policy actors contribute by providing Patent Protection Mechanisms to safeguard technology and innovations at the national and the regional level (Teece, 1977). According to Acs, Anselin and Varga (2002), patent protection is a license provided by a sovereign State or an authority conferring an exclusive right to an inventor to exclude others from using, selling or publicly disclosing an invention without the approval of the inventor. Given the centrality of technology and innovation, Transfer of Marine Technology is highly recognized by the Intergovernmental Oceanographic Commission as a mechanism for policy development (Harden-Davies, 2016). Harnessing the potentials of TMT as a policy development mechanism, its application, however, is not limited to regional spatial planning and development processes. IOC (2015) adds that TMT was entrenched in Arts. 5, 144 and 270 of the Convention to ensure reasonable exploration and exploitation of the seabed and the areas in developing countries and encourage international organizations to cooperate in accessing the benefits of the ocean. Klemas (1981) reiterates that Transfer of Marine Technology is a way of providing developing countries with the necessary tools required to improve on their capacity through collecting, analysing, and assessing information in support of sustainable development as also encapsulated in Chapter 17 of Agenda 21. To help address some striking gaps identified in this research, section 3.5.4 delivered a debate on how to execute effective joint agreements, and this debate in effect, obliquely reveals the extent at which issues relating to Transfer of Marine Technology is generally underemphasized by TMSP regimes depriving the significance of scientific and technical knowledge for sustainable development. As also underscored in section 4.4 concerning the technological analysis of the MaPP management regime, such scientific and technical knowledge does assist in the assessment and evaluation of management measures. As a result, this section correspondingly deliberates on the necessary Criteria and Guidelines required by TMSP regimes for the execution of effective Transfer of Marine Technology. This set of Criteria and Guidelines were derived from the IOC information document number 1203 adopted in 2003 by IOC Resolution XXII-12. This information document was issued by IOC/ABE-LOS following the mandate set forth in Article 271 of the Convention. This document extensively outlines a sequential criterion for enhancing TMT. The core elements of this set of Criteria and Guidelines specify that Transfer of Marine Technology must always be conducted on fair and reasonable terms and conditions and should enable all Parties involved to benefit equally from developments in marine science and its related activities, particularly those aiming at stimulating the social and economic activities in developing countries. It further specify that information and data must be user-friendly and relate to marine science operations and services; authorities must provide manuals or reference materials, criteria, and standards; authorities must provide equipment for sampling the following e.g. water, geological,

biological and chemical; authorities must provide facilities and equipment for marine research e.g. remote sensing equipment, tide gauges, buoys, ship board and others; authorities must provide equipment for respective institutions for analysis, experimentation and laboratory observation; technocrats must adopt new models and techniques for computer and computer software, and share technical, scientific and legal knowledge, techniques as well as methodological approaches for marine science research and observations. Following the above discourse it was noted that be it scientific or technical, TMT generally has the capacity of enhancing commercialization, policy and sustainable development. The discussion further acknowledged that in the absence of TMT, developing countries pose higher risk of experiencing unequitable benefits in marine science and its related activities such as environmental conservation and research, in addition to weaker mechanisms for exploring and exploiting marine resources. Ultimately noting that promoting such vigorous mechanisms in the Gulf of Guinea has the potential of enhancing commercialization and sustainable development in the region.

5.8. Emphasizing effective communication

In section 4.4., some lessons learned about the social context of the Marine Plan Partnership for the North Pacific Coast indicates that the First Nations and the shipping industry, who were earlier consulted with an accompanying formal invitation, were later struck with absolutely no interest to partake in the planning process. Such disengagement action was, however, ascribed to the “inability of planners to appropriately define how to engage relevant stakeholders through informal consultation and negotiation, dialogue, information sharing and effective communication outlining the overall vision and benefits of the regional action framework to the engaged parties and the region at large”. To expatiate on such a proposition and its productive merits, Pomeroy *et al.* (2008) reiterates that in the absence of effective correspondence, reciprocity and sincerity, credible trust cannot be realized. This suggests that to enhance better understanding and facilitate additional stakeholder input in the planning process, effective consultation and negotiation, dialogue and information sharing is considered paramount (CRC. 2016). In relation to the Rhode Island Ocean Special Area Management Plan for instance, an array of keynote addresses presented by the resource personnel at the 2015 conference, cited effective communication six times, credible trust fifteen times and maximum confidence twelve times (McCann, 2016). As further witnessed in the case of the Mami Wata MSP Pilot Project in the Gulf of Guinea, both inception and plenary meetings held in Accra by the planning group in March 2019 noted the significance of effective communication as an important tool to attain credible trust and stakeholder contribution. The preceding argument collectively shares that in the absence of effective communication, the planning process can be derailed as witnessed in the case of the MaPP management regime in Section 4.4 (Agardy *et al.* 2002). Relating this debate to the issue of California’s MPA network and its gross benefits for subsequent fish stocks, effective communication was considered paramount in pursuit of industrial growth (White *et al.* 2013; and Wilen & Abbott, 2006). To guarantee future prospects and ensure that planning efforts are not wasted, planners are obliged to frequently keep stakeholders informed to ensure continuity (Alley & Topelko, 2007; McCrimmon & Fanning, 2011). CRC (2016) further acknowledges the importance of demonstrating mutual respect in the information sharing process to assist in disseminating effective information. By so doing, negotiation and dialogue among stakeholder groups is reinforced to mitigate potential conflicts (McCann, 2016). It is crucial to also bear in mind that not all issues pertaining to ‘planning conflicts’ are likely to be addressed by the planning group as a result of divergent stakeholder views and

expectations. Such challenging condition in retrospect, require planners to accurately stipulate the specific roles of each stakeholder group and transparently complement such actions with baseline information (CRC. 2016; and Ehler, 2014). Following this process, a high degree of transparency must be prioritized and gear towards compromising significant trade-offs (UNEP&GEF-STAP. 2014; and Gleason *et al.* 2013). As deduced in this section, to enhance effective communication in the TMSP process, it is imperative to indicate the specific roles of stakeholders in addition to an expression of future management actions, and also ensure that each and every insightful information shared among stakeholders, is optimally operationalized. Further annotating the planning process in a way that can be better understood to assist in managing future expectations. In a nutshell, fostering mutual respect among stakeholder groups, has the capacity of maintaining a high degree of credibility and trust and to a greater extent assists in mitigating future conflicts in the planning process.

5.9. Summary

In this chapter, the discussion was deemed to place much emphasis on the underestimated elements of TMSP derived from the limitations experienced in the two case studies in chapter four in addition to the limitations uncovered in divers sections of the earlier chapters. To express this in detail, this chapter critically reviewed a series of literature capable of addressing the inherent difficulties experienced by the two analysed regimes and drew attention to a number of practical implications. The propositions in this chapter further shed light on some emerging concepts from the individual, collective, organizational and the academic level of cognizance, thereby providing a substantially unique contribution to the body of knowledge. The checklist of the derived underemphasized dimensions of TMSP as chronicled in Table 11, includes issues relating to mapping jurisdictional boundaries, prejudice towards local and traditional knowledge, leveraging human and institutional capacity, the role of an oversight advisory council, significance of contingency planning, incorporating transfer of marine technology, balancing spatial outcomes, and emphasizing effective communication. Casting into the study objectives in section 1.7.1., objective four sought to uncover the underemphasized dimensions of transboundary marine spatial planning as performed in this chapter. In-line with the empirical discussions in the subsequent chapter, the practical challenges identified in the Gulf of Guinea marine region as presented in Chapter One, shall also be discussed in light of the underpinning theories to assist in advancing the existing TMSP knowledge and the planning needs of the region.

Chapter Six – Discussion and Reflections

6.0. Overview

In contributing to the advancement of TMSP knowledge and planning needs in the GoG region, the discussion in this chapter draws on the derived theories to address the sea-use challenges arising from the GoG region which are associated with the research problems identified in chapter one. Through rigorous explanation of new insights and understanding, the discussion is focused on the empirical lessons learned from the region, and how to mitigate such emerging challenges. As these challenges (i.e., the conflicting marine activities) are peculiar to specific sectors who are able to provide adequate information about the environmental practices in the region, the primary data were sourced from such sectors including the oil and gas, fisheries, shipping, ocean users and the national focal points of the Abidjan Convention. The objective for gathering such a data, is merely to identify the proximate causes of sea-use conflicts, their effects and prospects. In extension the proximate causes, has the potential of uncovering the conflict-prone activities in the region as this approach is also considered germane to the fifth Step of the IOC standard modalities to ecosystem-based MSP. This step discusses the significance of “defining and analysing the existing conditions” in the management area as expressed in section 3.2.1. The adverse effects on the other hand, reveals the potential threat in order to set goals to prevent those threats. In the spirit of strengthening true consensus, the key prospects shall assist in addressing the fundamental needs of the region. As part of the discussion, quotes from the key respondents are transcribed to help elicit indigenous perceptions, impressions and expectations, following coding and selection of key statements from the respondents. The emergent themes set forth for the discussion include the common-interest conflict between Ghana and Togo on the ultra-deep Keta East block; the sovereign dispute on the maritime frontier between Ghana and Côte d’Ivoire; and the sea-use conflict between artisanal and industrial fishing vessels in Ghana.

6.1. Justifications for the chosen design

Silverman (2000) defines research design as an effective formulation and development of research methods to find answers to questions raised during deliberations over matters concerning theory and policy. As encapsulated in section 1.10., the antecedent of sea-use conflicts in the GoG region encompass the endowment of mineral resource or oil deposits in the region. For instance, oil was discovered in commercially viable quantities in Ghana in 2007. The first lifting took place in 2010, first export in 2011 (PIAC, 2012), and the maritime boundary dispute between Ghana and Côte d’Ivoire emerged in 2014 (Bening, 2015; Annan, 2014; Harrould-Kolieb & Kolieb, 2014). According to Oppermann (2000), studying such new trends presents major difficulties in obtaining sufficient data for analysis. One way to mitigate this problem is to use a data triangulation approach in order to rely on multiple sources of information. Bryman (2006) reiterated that this approach has several descriptions such as *multi-method*, Brannen (1992) and *multi-strategy*, Oppermann (2000). Experts found that the most effective way to design a case study, is to explore the triangulation approach and infer data from different context (Anderson, 2004; Collis & Hussey, 2009; Lee, Mishna & Brennenstuhl, 2010). Triangulation augments internal validity and defers mediocrity (Lee, Mishna & Brennenstuhl, 2010). Pundits argue that triangulation determines how a data converge around particular theory and acts to strengthen its claim or determines whether multiple sources of data demonstrate new theory (Anderson, 2004; and Collis & Hussey, 2009). Silverman (2010), concludes that with every piece of research, the researcher decides which kind data will be collected, analysed and presented in the study.

6.2. Questionnaire design and development

In this research, the primary questions were designed to suit both quantitative and qualitative research approaches. For the purpose of validity, the primary questions were accompanied with a cover letter from the World Maritime University to the respective entities for their understanding and approval prior to the survey. This approach helped to provide better understanding and purpose for the data usage. Veal (2006), emphasizes that questionnaire design for quantitative research, is a way of providing sound information for respondents by using a formally scheduled questions, and it requires the respondents to answer the questions themselves (Bryman, 2008). In this process, respondents are given time to think, and in some cases consult other sources when they do not have answers to the questions. According to Bryman (2008), open questions allow respondents to answer without restrictions and specifications. The respondents decide how shallow or in-depth their answers should be. This presents both advantages and disadvantages to the researcher, as such answers may give added information or less information as required by the questions. Closed questions, on the other hand, restrict respondents to specific answers which may require respondents to tick or circle their preferred answers provided in the questionnaire. This implies that, closed questions produce short answers such as names, numbers and places, and do not require speculations (Bryman, 2008). According to Wisker (2009), this approach limits the response rate and does not enable the respondents to reflect and deliver their thoughts and valuable answers. In this survey, both open and closed questions were considered. Following this development, the researcher kept track of all sent and received emails and further used telephone calls to follow up with the respondents for quicker response. Frequent calls were made until respondents sent their answers. Prior to the questionnaire design, this research initially considered both academic and expert's advice to ensure that all the questions asked were appropriate and were validated to suit the study objectives. In extension, the questionnaires were designed for respondents to choose two possible answers per question in order to ascertain the actual conflicting marine activities in the GoG region. As presented in *italics*, the following represents some of the questions asked. *e.g., which of the following marine operational activities in this region usually conflict with each other?*

☒ Fishing and its related activities

☐ Navigation and sailing

☐ Military activities

☐ Onshore or ports activities

☒ Oil and gas activities

Other (Please State):

Pundits such as Bernard (2000) acknowledge that a large sample size augments internal validity and defers mediocrity. As a result, the quantitative data collection considered a sample size of approximately one hundred and seventy (170) group-administered closed questions. Of this, one hundred and fifty (150) responses were received. Regarding the questionnaires, Bernard (2000) explained that, if the questionnaires are salient to the respondents, response rates are high due to their understanding in the subject area. Alreck & Settle (2004) underscored the need to critically ensure that questions asked are appropriate in order to validate analysis and highlight important areas for change. The sampling method used, provided an efficient and cost-effective approach to information gathering. It further reduced the number of questions and encouraged greater data availability than at present. Below provides the overall merits of the sampling method used: 1) assisted to identify the essential geo-political elements in the

study domain; 2) ascertained conflict prone areas in the study domain; and 3) provided accurate primary data as expected.

6.2.1. Quantitative data input strategy

Bryman (2012) explains that the term objectivism, is grounded in the notion that challenges in our environment constitute an assumptive reality. The underpinning argument helped in incorporating the objectivist approach to assist in describing and explaining the emerging challenges in the GoG region. According to Gall *et al.* (1996) the gathering, quantification and examination of such data necessitates a deductive approach with an assimilation of “inferential statistics”. Such statistical analysis, however, allows the researcher to make conclusions about the research results. The term inferential, comes from the word inference, meaning, to analyse numbers and draw conclusion from clues in the environment through estimations and predictions (Lowry, 2014). To elicit appropriate data for inferential statistics, the questionnaire included an array of open and closed-ended questions. The data input strategy for the closed questions saw this research utilizing the ‘Likert scale’. By so doing, the multi-variable data sets were numerically colour coded in a spreadsheet to ascertain proportionality. This means that colours were given to the preferred answers based on respondent’s priority. Bernard (2000) and Robson (2002) justified that the scaling method used, does enable further interpretation and evaluation of the data. In order to set the context for analysis, the spread sheet below, provides background detail of respondents’ views in alphabetical order.

Table 12. A multiple variable quantitative Likert scale indicating category of respondents and their answers.

PRIORITY KEYS:						
VERY HIGH	HIGHER		HIGH		LOW	VERY LOW
Respondents Category	Answer A	Answer B	Answer C	Answer D	Answer E	Total responses
The National Focal Points	C - 15	1	1	4	11	15
	E - 8	3	9	10	0	
	P - 6	4	6	8	4	
The Maritime Authorities	C - 34	1	5	3	27	30
	E - 13	9	14	25	2	
	P - 14	7	15	18	9	
Navy	C - 4	3	14	9	0	30
	E - 16	3	1	0	10	
	P - 7	10	0	15	3	
Shippers	C - 21	20	2	3	4	27
	E - 3	18	5	18	8	
	P - 16	6	5	23	0	
Fisheries	C - 3	13	15	11	8	15
	E - 11	11	2	15	9	
	P - 7	1	1	7	11	
Ports & harbors	C - 1	8	5	6	0	10
	E - 0	0	7	6	7	
	P - 7	3	1	4	5	
Oil and Gas	C - 20	17	14	12	7	23
	E - 19	2	10	23	19	
	P - 7	5	8	12	4	
						Gross input = 150

6.3. Empirical data and methodology (qualitative)

According to Hox and Boeijs (2005), primary sources are first-hand information gathered by a researcher when an issue, event or an incident occurs in a particular domain. This information may, however, be sourced through interviews, mails, webpages, books, journals, diaries, archives, manuscripts, observations, speeches, literature and statistical data, letters, newspapers and magazines. Silverman (2000), argued that ‘expert sampling’ is a way of eliciting views of persons with specific expertise and allows the researcher to gain in-depth insight from the experts. Silverman (2000) summarized that many researchers employ this method because, they seek out groups, settings and individuals in their case study domain. Menkel-Meadow (2008), further stressed that in scientific research, it is imperative to engage the services of respective technocrats to share their scientific ideas, expertise and opinions to help augment the existing knowledge. In this research, the qualitative data, was sourced from the experts and technical staff working within the oil and gas sector as well as the fisheries and aquaculture sector due to the presence of conflicts centred in that area. Using a list of questions, such an approach assisted to ascertain the indigenous perception and impressions of the engaged technocrats. The approach further helped when there was no opportunity to perform the interview more than once with each participant (Bernard, 2000). According to Valentine (1997), using a list of interview questions prevents misinformation and works well with technocrats, bureaucrats and elites who are habituated with the efficient use of time, and further enlightens the interviewee about the expectations of the interviewer. The list of questions were arranged sequentially with the aim of covering each topic in a specific order, and were also open-ended so as to gain insights and perceptions of experts and policy actors. Bell (1999) summarized, that this procedure also enables the researcher to critically assess the answers. Concretely, each interview was structured to take no longer than thirty (30) minutes and the respondent’s full anonymity and confidentiality was assured. Stressing confidentiality and anonymity, following the qualitative data acquisition, these data were arranged and grouped using the abbreviations of the participant’s organization as seen in the beneath Figure. Lewins & Silver (2007) explained that the adopted technique, clarifies divergent views and provides insight and ideas that complement the research paradigm.

Figure 32. Abbreviations of the interviewees and their organizations (Derived in this research).

The analysis of the empirical data, however, geared towards a standard discussion which further assisted in providing a series of theoretical recommendations to address future expectations of both technocrats and policy actors. According to Leedy, Ellis & Ormond (2005), research is a systematic process of collecting, analysing and interpreting information or data to enhance contemporary knowledge and address the identified challenges. Hakim (1987) reiterated that methodology forms an integral part of every good and credible research

design and for that reason selection of the most appropriate methods or the formulation of sound methodology must seek to address relevant questions in-line with the research objectives. Clifford & Valentine (2003) added that the use of “appropriate” does not only describe the best methodology for collecting, analysing and presenting the data, but it also indicates that the objectives of the research are achievable and are not beyond the scope of study. Pundits argue that case studies that focus on intense investigation of real-life issues, contributes to building sufficient evidence to guide practitioners (Silverman, 2000, 2010; Lee, Mishna & Brennenstuhl, 2010; Collis & Hussey, 2009; Edward, 2009; and Dattilio, 2006). Anderson (2004).

6.3.1. Evaluation of qualitative results using in vivo coding

According to Neuendorf (2002) and Smith (2005), in qualitative analysis, large amount of data enhances researcher’s understanding and impacts positively on the findings. Gibbs (2002, 07); and Richards (2005) added that when using in vivo, coding of responses becomes vital since the approach involves categorization and examination of responses. To do this, groups of text are assigned to groups of themes with the number of quotes converted into percentages to ascertain the highest of quotes as presented in Figure 33 below. ACETIC (2006) summarized that the text quotes must have a theoretical concept that conforms to the emergent themes and describes the structure or content of the interview questions. In effect, Strauss and Corbin (1990) pointed out three major techniques for in vivo coding.

- *open coding*, where the text is read reflectively to identify relevant themes;
- *axial coding*, where categories are refined, developed and related or interconnected;
- *selective coding*, where the core category, or central category that ties all other categories in the theory together is identified and related to other categories.

On the basis of the foregoing, open coding is employed for the evaluation of qualitative data due to the constructs of the interview questions, and the outcome shall synthesize with the quantitative findings for an effective output. Experts such as Glazer (2003); Welsh (2002); Bazeley & Richards (2000); and Bazeley & Jackson (2013) argue that this approach helps in grounded theory generation. To determine the degree of conflict causation, effects and prospects, the following formulae is applied.

e.g., Causes = $\frac{\text{Highest quote per category} \times 100}{\text{Total number of quotes per category}}$

$$\frac{\text{Fishing and Protected areas} \times 100}{21}$$

$$\begin{aligned} \text{i.e., } \frac{19 \times 100}{21} &= \frac{1900}{21} \\ &= 90.5\% \end{aligned}$$

The preceding outcome implies that 90.5% of key respondents indicated commercial fishing and marine protected areas as the emerging conflicting marine activities in the GoG region.

Figure 33. Qualitative results.

6.4. Common-interest conflict between Ghana and Togo on the ultra-deep keta east block

Within this section and the two subsequent sections, the discussion throws light on the emergent themes reflecting the specific challenges arising from the GoG marine region which are associated with the research problems or the sea-use conflicts identified in Chapter One. As also elaborated in this section, a magnitude of the common-interest conflict between Ghana and Togo in section 1.1, was centred on the acquisition of oil blocks within the East Keta basin close to the borders of Ghana and Togo. Following the argument presented, it was noted that a coastal State's right of ownership over the exclusive economic zone is tenuous until joint agreement is reached, justifying the essence of preliminary agreement with the opposite or adjacent coastal neighbours. The argument further stressed that each disputing Party is eligible to exercise over its Continental Shelf rights of exploring and exploiting its natural resources since such rights are exclusive in the sense that if a coastal State does not explore the Continental Shelf or exploit its natural resources, no one may undertake these activities without the consent of that State. Yet, what makes the conflict between Ghana and Togo a bit more cumbersome is the believe that, Togo does not recognize the legitimacy of the boundary between its neighbouring State Ghana in respect to the oil and gas exploration, for that matter requesting Ghana to enter into a tacit agreement to help avoid further implications. This follows five consecutive attempts of reaching bilateral negotiations without a fruitful outcome. Upon realizing the future implications, both Parties later agreed to establish a Land Boundary Terminus at Boundary Pillar 1 close to the East Keta basin on 22 August 2019. Based on the interview response or the qualitative data gathered from experts and technical staff of the oil and gas sector abbreviated as OAG, the following quotes in *italics*, represents the respondents or indigenous perception and impressions in addition to a series of recommendations for addressing future expectations.

In this sector, one respondent alluded to the fact that there are divergent views and opinions of individual States which often contribute to ineffective realization of joint agreement.

In contributing to addressing such insufficiency, draws attention to section 3.5.4 which emphasizes the extent to which the era of joint agreement is ascending with often win-win approaches in the decision-making process, further stressing the essence of effective communication, negotiation, sectoral common goals and an impartial oversight to provide equitable outcome for all. In the situation of jurisdictional uncertainties concerning national boundaries, section 2.1 suggests the importance of delimiting the exclusive economic zone and continental shelves in accordance with Arts. 74 and 83 of the Convention as also referred to in Art. 38 (1) of the Statute of the International Court of Justice. With legitimate underpinning, this approach helps in building a formidable consensus through cultural and customary procedures as reflected in the case of Ghana and Togo with both countries having to agree on the establishment of a Land Boundary Terminus at Boundary Pillar 1 close to the East Keta basin in lieu of the strategic provisions enshrined in the Convention (Section 1.1). The preceding argument admittedly suggests that even in the existence of multinational differences, joint agreement is yet feasible through the consideration of a legitimate underpinning, effective communication, negotiation and impartial oversight. Additional management tool for addressing such insufficiency draws attention to the provision of a universal zoning arrangement between opposite and adjacent States using a compatibility matrix (Section 3.2.1).

One other respondent noted the degree to which sectoral planning has assisted in the growth of the oil and gas industry, and also mentions how a multi-sectoral approach offers further options in promoting sustainable development. Adding that fishers are unhappy because they perceive the marine environment as their right to fish anywhere, for this reason they wilfully breach the law requiring a mandatory 500m exclusion zone around oil platforms which consequently aggravated the common-interest conflict between Ghana and Togo.

Regarding the bone of contention between roughneck and piscators in relation to 500m exclusion zones for fishing around oil platforms, the legal provisions in section 2.2.1 note the lack of enthusiasm by the authorities in the provision of a compatibility matrix. As presented in Table 5, this matrix enables us to ascertain which activities are compatible with each other prior to the commencement of such activities. One practical example that can be referred to is sand and gravel extraction, which is not compatible with offshore pipelines and cables, as also witnessed in the situation of fishing which is not compatible with oil and gas exploration. In accordance with Section 9 (a) of Ghana's Maritime Zones Delimitation Law (P.N.D.C.L 159), the Act stipulates that 'in the exclusive economic zone, the Republic has, to the extent permitted by international law, sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the sea-bed and of the sea-bed and its subsoil, and with regard to any other activities for the economic exploration and exploitation of the zone, such as the production of energy from the water, currents and winds'. In spite of the existence of such law in addition to permitted zones and boundaries as presented Figure 8, Ghana has not yet taken the opportunity to amend, neither to enforce the regulations enshrined in the delimitation law to enable the development of a compatibility matrix and secure her maritime zones since the enactment of such law in 1986, further providing the enabling environment for a sovereign conflict of this nature to occur.

One respondent is of the view that transboundary marine spatial planning has the capacity for addressing the common-interest conflict between Ghana and Togo, but for MSP to go beyond national borders, ECOWAS member States must be encouraged to enhance collaboration and coordination.

In perspective, section 1.5 asserts that ‘the TMSP concept was, importantly, adopted to protect and develop the environment, prevent marine conflicts and enhance cooperation, augment coordination and encourage blue economic growth’. ‘Most importantly, an integrated, systematic and hierarchical approach to sustainable use is required to allow nations to address their ocean governance challenges simultaneously. Hence, professional actors and stakeholders do assist in the crafting of a draft plan that enables more flexible standards and monitoring, with provisions for revision and adaptation when the planning conditions change’. Section 3.4 underscored that in practice, unilateral approaches bestride boundaries and it merely encompasses national strategies and plans as against multilateral approaches which rides on a host of transboundary mechanisms for maximizing cooperation and promoting peaceful co-existence, enhancing coordination and preventing future overlapping entitlements, protecting and developing the environment to encourage blue economic growth. To accomplish these processes and address ocean governance challenges in the Gulf of Guinea, the UN Environment, under the auspices of the Abidjan Convention in 2019, adopted a regional protocol on integrated coastal zone management to promote a three-year MSP pilot program for Ghana, Côte d’Ivoire and Benin through the engagement of professional actors and stakeholders to assist in the crafting of a draft plan currently receiving much attention by facilitators as stated in section 1.10.

One respondent additionally notes the degree to which the MSP pilot program in the Gulf of Guinea marine region requires clearer and measurable goals and objectives and further recommending the regional authorities to take account of these shortfalls to side-step ensuing challenges.

In the Gulf of Guinea marine region, it is uncertain how the regional authorities are addressing issues pertaining to the provision of MSP goals and objectives with stipulated timelines for the attainment of projected outcomes, since the pointe noire protocol on integrated coastal zone management in its current state does not in explicit terms spell out the MSP goals and objectives as also reflected in the conclusions reached at the plenipotentiaries meeting in June 2019 at Abidjan. In-line with Ehler and Douvère’s theory on the ten step-by-step approach to ecosystem-based MSP in section 3.1, step three of this guide suggests that to avoid disorientation in the planning process, well-defined objectives, which take account of indicative PESTLE issues and potential conflicts, are required at the planning process. This process primarily focuses on creating an MSP team responsible for developing the anticipated goals and objectives, including a work plan, schedule or time-frame for the planning process, and an assessment of risk of what might go wrong during the planning process and contingencies. Six examples of well-defined MSP objectives which can be adopted by the GoG region are as follows:

- To earmark 40% of marine space that will help produce 85% of energy needs by 2022;
- To build capacity for the legal regime and strengthen the legal institutions by 2023;
- To enhance the existing laws and regulations to ensure a sustainable MSP by 2024.
- To build capacity for marine resources and environmental management by 2025.
- To ensure that 15% of marine space is available for oil and gas production by 2026 and
- To protect and sustain the marine and coastal environment by 2027.

One additional challenge in the GoG region noted in section 1.3., pertains to the sea-use conflict between the artisanal and industrial fishing vessels in Ghana which is given a greater depth of discussion in section 6.5.

6.5. The sea-use conflict between artisanal and industrial fishing vessels in Ghana

In section 1.3., the sea-use conflict between artisanal and industrial fishing vessels in Ghana was discussed. The discussion in extension revealed the extent to which artisanal fishing in Ghana has intensified from five thousand canoes in 1990 to fifteen thousand in 2019, contributing to increasing pressures, competitiveness and conflicts in the marine environment. Such intensity, however, triggered a growing number of illegal activities such as dynamite and light fishing to surface in the country, affecting supply of fish stocks from 1990 to 2019. Then came the advent of licensed fishing vessels who plied their illegal trawling activities within the 12 nautical mile zone earmarked for artisanal fishers. In the quest to mitigate such a menace, the artisanal fishers filed a legal suit against the industrial vessel operators at the High Court challenging their legitimacy in that business, particularly the transshipment aspect of fishing originally known as the *Saiko* business. Following a judgment delivered in favour of the artisanal fishers after three years of legal proceedings, the operations of the industrial fishing vessels rather intensified making room for widespread illegal, unregulated and unreported fishing activities. Following this development, the Ministry of Fisheries and Aquaculture maidenly announced a closed fishing season from 15 May to 15 June 2019, but the long-standing conflict between the artisanal fishers and industrial vessel operators, caused the artisanal fishers to announce their intention for non-observation to the closed fishing season in the ensuing years, and requiring the government to halt the operations of the industrial fishing vessels within the confines of the artisanal fishers. As this case pertains to the fisheries and aquaculture sector abbreviated in this research as FAA, a series of qualitative data was solicited from the experts and technical staff of the sector in accordance with the objective for ascertaining indigenous perception and impressions of the case. This follows a theoretical recommendations to address future expectations of respondents through a standard discussion.

As key to reaching a common goal and enhancing cooperation, one respondent recommended the MSP planning group in the GoG region to engage the views of ocean users in the planning process.

Such a suggestion comes in owing to the fact that the regular artisanal fishers in Ghana have argued over the years about their non-inclusion in maritime related decision making processes which caused their plight to have demonstrated their displeasure against the licensed vessel operators. The artisanal fishers further lamented that even when their voices are heard on various platforms, the outcomes are usually unfruitful. The expectation of reaching a common goal and enhancing cooperation among the governance machinery and the ocean users brings to attention the significance of meaningful engagement which in other words is defined as an ongoing commitment by a group of people with a transparent and shared vision tailored to side-step negative outcomes or unequal benefits (Section 3.5.3). An alternative perspective shares that in the sphere of transboundary marine spatial planning, the term meaningful engagement, reflects transparency, fairness, trust, cohesion, mutual benefits, encourages long-term development, ensures solidarity and avoids conflicts (Ibid). Indeed, such meaningful engagement is observed to have been neglected by the governance machinery in the absence of MSP planning and engagement strategies in the country which adversely triggered the filing of a legal suit against the industrial vessel operators at Ghana's High Court. While some planning groups conduct rigorous engagement approaches, others argue that ad hoc consultative approaches with an advisory capacity seem more effective. Candidly, both approaches are said to be viable, but what constitutes meaningful engagement is dependent on social factors arising from current political strength, previous management strategies and public expectation (Section 3.5.3). Although rigorous engagement approaches occasionally trigger social mistrust as a result of conflict of interest and other social vices, for this reason experts encourage alternative means of engagement such as informal social gathering which does assist in building social trust and public confidence in the planning process and enhances

the commitment of participants to the plan. In this process, it is imperative to indicate when, where and how to engage ocean users based on your management objectives (ibid).

In a related development, one fisher-folk additionally mentioned that to avoid sea-use conflict in the fisheries sector, it is advisable to incorporate traditional and local knowledge in support of the ocean governance system.

Pursuant to the argument put forth in section 5.1., there are concerns that sea-use management knowledge and theories are often focused on western science as reflected in the preceding quote, rather than the traditional and local knowledge. In the said debate, experts acknowledge that using western science as the only decision-making tool, barely reflects the result in other jurisdictions due to cultural disparities, religious beliefs and legal connotations. Hence, scientific predictions and findings in such jurisdictions are led to more discrepancies arising from political initiatives and divergent social and cultural views. This may be seen to reflect in the alienation of the public with often little or greater sense of apathy demonstrated in addition to strong opposition to scientific decisions. The debate further stressed that although transboundary marine spatial planning tools and concepts have the capacity of managing multiple uses of the sea, their application differs from one management area to the other, and thus MSP data and analysis precludes the significance of traditional and local knowledge. As such, scientific input in itself must act as a supplemental mechanism, instead of broadly tackling fundamental challenges in the world over. Further justifying that traditional knowledge in its practical sense, play a crucial role in achieving ocean management goals due to the fact that, its evolving kind of knowledge is collective in practice with adaptive values for succeeding generations, and its cultural significance enhances indigenous relationship in addition to its ability to cope with current and future environmental conditions (Ibid). One good example, is the Marine Plan Partnership for the North Coast which held its symposium in 2015 by engaging several local actors with impressive varying views and complementary goals to advance the current state of the regional action framework (Section 4.4). In a related development, the Eastern Scotian Shelf Integrated Management process also recognized the importance of engaging First Nations for local knowledge acquisition which in-effect, assisted in improving upon the input of its data or inventory (Section 4.7). Such results demonstrate that giving ears and voice to indigenes, promotes traditional and local insights and further assists in reaching complementary goals.

At the Ministry of Fisheries and Aquaculture, one other respondent is of the view that scientific knowledge on the other hand, has the capacity of providing additional information to ensure a resilient ecosystem services.

In extension, scientific knowledge, which has been in existence since time immemorial, is philosophically driven, requires adequate data, time and money (Section 5.1). In the sphere of transboundary marine spatial planning, such knowledge informs habitat characterization in addition to biologically and ecologically sensitive areas, and their deprivation, however, offsets the planning process as witnessed in the case of the ESSIM management regime in section 4.6. In this planning process, due to inadequate spatial analysis, the government of Newfoundland and Labrador raised objections concerning their overlapping boundaries leading to lack of momentum for implementation (Section 4.8). This challenge emphasizes the significance of scientific information in transboundary planning. Notwithstanding the fact that fishers are more acquainted with traditional knowledge due to their daily activities both onshore and offshore, yet applying scientific knowledge helps in addressing environmental issues and advances the existing knowledge in a more categorical and empirical manner (Section 5.1). This helps to conclude that by considering both traditional and scientific forms of knowledge and its application provides vast opportunity for advancing pre-existing knowledge and promotes local engagement in the planning process. Noting also that if contracting parties engage divergent views and understanding due to the absence of scientific information, primary solutions do not surface. As discussed in section 4.3.1., this situation was at variance with the planning process

in the North Pacific Coast which incorporated both local and traditional knowledge and a vigorous scientific input to complete its four sub-regional spatial plans to demonstrate the extent to which both forms of knowledge augments cooperation in the planning process.

A separate opinion shared by one expert at the fisheries ministry indicates that often times spaces earmarked for ocean users are too small, which he believes are the proximate causes of a number of fisheries conflicts in the country, hence the need for expansion.

To earmark appropriate spaces for ocean users as suggested by a respondent at the fisheries ministry brings to attention the importance of projecting future trends by planners through scenario planning. In section 5.6, the study suggests effective utilization of TMSP objectives to balance the primary needs of ocean users and foster ecological emphasis. Section 3.3 argues that this process ensures taking account of new demands for marine space and determines the number of years taken by each sector to occupy extra space. This inform planners about the highest and the lowest degree of marine space-expansion by each sector in the next 5 to 100 years. The outcome in effect, projects future trends and indicates when, where and how human and non-human activities will transpire in that area. Such scenarios further specify the exact location of your alternative human and non-human activities based on the estimated space-allowance. Indeed, the problem of minimal allocation of marine spaces as confronted by the people's republic of Ghana, is a practical reflection of a similar incidence in the Kingdom of Belgium (Section 5.6). Such debate in its extension, notes an example of a political interest by the kingdom of Belgium – leading to its failure for not adhering to the European Union's Directive for achieving 20 per cent offshore wind energy generation by 2020. Further limiting the volume of its wind energy generation from 20 to 13 per cent with a production capacity of approximately 2.1 GW. The foregoing analysis notes the extent at which fundamental objectives of planning regimes often fail to balance the primary needs of ocean users due to the striking political interests.

6.6. The sovereign dispute on the maritime frontier between Ghana and Côte d'Ivoire

As extensively elaborated in section 1.2., on December 3rd 2014, the republic of Ghana filed a legal suit against her neighbouring State Côte d'Ivoire pursuant to Article 15 para 2 of the Statute of the Tribunal, under the United Nations Convention on the Law of the Sea by way of special agreement concluded between the disputing parties. This follows ten unsuccessful attempts at reaching a bilateral agreement with Côte d'Ivoire on the extent of each side's claim. This dispute in question, was perceived by civil society organizations in the region as a failure on the part of the disputing parties to settle their maritime boundary differences as expected by the Convention, rather than an aggressive claim for mineral resources. Such hindrance may supposedly be attributable to the lack of proactive measures by both countries prior to the dispute. Upon realizing the subsequent implications, the Special Chamber of the Tribunal in its mandate, prescribed provisional measures for Ghana to take all necessary measures to ensure that no new drilling, either by Ghana or under its control, takes place in the disputed area. Such measures as a result, led to a resource movement effect in Ghana decreasing oil production capacity from 120,000 to 80,000 barrels per day, affecting Ghana's gross domestic product by 4 per cent between 2015-2017 fiscal years. Investor confidence sharply declined based on a marginal degree of uncertainty, with Tullow Oil for instance, holding off its new drillings, which consequently affected employment and labour. This follows an exchange rate effect. At this point, the minimal quantity of oil production impacted negatively on exports, which adversely affected the value of Ghana's local currency. Oil prices were hiked based on an

excessive demand for imports with indigenous oil firms within the value chain folding up. As this case pertains to the oil and gas sector abbreviated in this research as OAG, data was gathered from the experts and technical staff of this sector in order to ascertain their perceptions, impressions and expectations as also conducted in the two preceding cases.

At the petroleum commission, one respondent mentioned that although transboundary marine spatial planning has the capacity of minimizing boundary disputes, yet, complexities in the planning process often tends to hinder management progress.

In section 3.5.6., the concept of transboundary marine spatial planning was complementarily defined as a mechanism for promoting cross-border cooperation and overcoming the insufficiencies that plague multilateral planning systems, in addition to addressing the incoherencies between stakeholders, planning groups and policy actors. The discussion in extension reveals the extent to which regional planning approaches are confronted with immense challenges due to divergent cultural practices and differing national expectations. This justifies the reason most transboundary planning adopts small-scale approaches as a key component to secure a large-scale management regime alternatively known as the decentralization system. Further interrogation in section 3.5.6., revealed that the complexities of transboundary planning around the world is also attributable to the overly large number of coastal States involved in the planning process – helping to deduce the extent at which an array of general expectations and diversity of interest tends to frustrate the momentum of the planning process. This implies that the larger the geographical scope, the more effort and resources are required to satisfy the general interest and expectations of the people in that management area. Although the entire planning process may have a common goal, it is imperative to decentralize the process in order to mitigate the emerging complexities. In the Gulf of Guinea for instance, the Mami Wata MSP Pilot Program involving Ghana, Côte d’Ivoire and Benin incorporated the decentralization system of planning, and this further allowed for inter-agency cohesion in the planning process – helping to demonstrate the momentousness of decentralization in TMSP planning and management.

To curtail future eventualities such as maritime boundary dispute, at the office of petroleum cooperation, one staff expressed concern about the lack of desire by policy actors to engage technocrats for the provision of emergency schemes.

The phrase emergency scheme, as stated by the respondent, is literally referring to the provision of contingency plans by technocrats for the purpose of preventing future eventualities such as boundary disputes. In section 5.5., a contingency plan was defined as an action plan tailored to assist in preventing future eventualities, and this plan is sometimes referred to as ‘Plan B’ because it serves as an alternative plan if the expected results of the actual plan i.e., TMSP, fail to materialize. Despite the fact that it is uncertain how contingency planning approaches may have the capacity of preventing maritime boundary dispute, the argument in section 5.5 asserts that formulating a contingency plan does not only serve the interest of a specific discipline nor a single problem, but addresses a host of challenges across strata. One practical example, is referred to the North Pacific Coast which experienced environmental and sea-use challenges due to an ineffective prompt response mechanism as debated in section 4.4. As a result of a continuous cycle of planning, training, exercising, evaluating and improving the management measures, the Marine Plan Partnership for the North Pacific coast experienced substantial progress which indeed can be ascribed to the outcome of robust contingencies (Ibid). Acknowledging that in the crafting of such contingencies, stakeholders and technocrats are engaged as expressed in section 5.5. Pursuant to Art. 147 para. 1 of the Convention, provision of such contingencies must help accommodate maritime activities and ensure that all activities carried out in the marine environment recognize the importance of the other. Para. 2 (a-e) emphasizes that installation of mechanical equipment such as mining and dredging devices, wind turbines and cables, gas pipelines as well as oil rigs, are regulated in accordance with the procedures enshrined in the Convention.

At the office of Tullow Oil, the largest oil firm in Ghana, one other respondent was of the view that an earlier consideration of marine technology, could have assisted in minimizing the increasing number of disputes in the region.

Per the definition in section 5.7., transfer of marine technology is a process of exchanging technical and scientific information to enhance commercialization and development, and such technology is recognized in Arts. 5, 144 and 270 of the Convention for ensuring reasonable exploration and exploitation of the seabed and the areas for developing countries, and encourages international organizations to cooperate in accessing the benefits of the ocean. In the process of justifying the capabilities of such technical a mechanism, Chapter 17 of Agenda 21 reiterates that transfer of marine technology is a way of providing developing countries with the necessary tools required to improve on their capacity through collecting, analysing, and assessing information in support of sustainable development. Concretely, this process is conducted on fair and reasonable terms and conditions and enables all Parties involved to benefit equally from developments in marine science and its related activities, particularly those aiming at stimulating the social and economic activities in developing countries (Section 5.7). This also suggests that in order to satisfy the fundamental needs of the engaged Parties and prevent future contentions, indicatively, such technologies may be designed to take account of the current and future needs of the people in that management area so as to avert the risk of experiencing unequitable benefits in marine science and its related activities. Ultimately noting that promoting transfer of marine technology in the GoG has the potential of enhancing cooperation, commercialization and sustainable development in the region.

In-line with the above discussion, the final respondent from the petroleum commission mentioned unsatisfactory conflict prevention strategies among Member States who utilizes the sea.

Per the theoretical deliberations in section 1.5., TMSP as a technical mechanism, has a central coordination function that brings disjointed decision-making regimes under one umbrella, and this concept in broader perspective, helps in preventing disintegration between biophysical systems, socioeconomic activities and governance. In the process of preventing disintegration among coastal States, the debate in section 1.5 further mentions that it is crucial to consolidate the Sustainable Development Goal 16 to promote peaceful and inclusive societies for sustainable development, provide access to justice and build effective, accountable and inclusive institutions at all levels. An alternative perspective suggests that organizing stakeholder fora, conferences and workshops occasionally triggers misunderstanding, and to avert such a challenge, proactive strategies can be applied as stressed in section 3.5.3. This approach in view, aligns a series of principles indicating clear driving priorities with joint objectives and assesses future risks at the pre-planning stage with contingencies (Section 2.9). If this approach fails to materialize in the event of a severe conflict, the mediation procedure can be applied. This procedure is similar to the Alternative Dispute Resolution procedure (ADR). In this procedure, a negotiation is done by a third party mediator and a decision is made based on the agreement between the litigants. Such a reactive mechanism is often used to resolve conflicts between individuals, labour and management. As this discussion comes to conclusion, the following sections shall assist in interpreting and evaluating the quantitative results in order to ascertain the proximate causes of maritime-based conflicts, their effects and future prospects based on the aggregation of both quantitative and qualitative results.

6.7. Quantitative data interpretation and evaluation

Table 13 below, presents the fundamental differences in the responses provided by individual sectors engaged in the quantitative data acquisition process. One basic parameter set for the quantitative analysis is the Multivariate Analysis of Variance (MANOVA). In statistics, this form of analysis contains several dependent variables and examines each component separately (Seber, 1984). In this research, the multivariate data sets were apportioned into separate components as provided in Section 6.2.1 Table 12, and they were interpreted to identify the conflicting marine activities in the GoG region, their effects and prospects. In the data interpretation process, the research combined two highly prioritized answers from each respondent category based on the construct of the primary questions. See the closed-ended question in *italics* presented in section 6.2 as an example.

Table 13: Quantitative data interpretation and evaluation.

Categories	Interpretation and evaluation
National Focal Points	The National Focal Points in the GoG region responded to 15 questionnaires. Of this, 13 strongly pointed to <i>fishing</i> and <i>oil and gas</i> being the most conflicting offshore activities in the region. Five indicated that these conflicting activities critically affect <i>economic</i> and <i>social systems</i> in the region. Four respondents further suggested <i>regional environmental laws</i> to prevent future conflicts.
Maritime Authorities	Maritime authorities in the region also responded to the questionnaires by providing 30 responses. Of these, 30 emphasized that <i>fishing</i> and <i>oil and gas</i> , are the activities with high conflicts in the region. Thirteen stipulated that such conflicts indeed affect <i>economic</i> and <i>social systems</i> . Owing to these effects, 9 respondents proposed <i>regional environmental laws</i> to help prevent future occurrences.
Navy	The navy impressively provided 30 responses. Out of this, 20 officers pointed to <i>protection of lives at sea</i> and <i>ship-to-ship fighting</i> as the activities with high conflicts in the region. Nineteen officers pointed out that such conflicts directly affects <i>fishing</i> and <i>shipping</i> . In terms of future prospects, 10 officers suggested the enforcement of <i>regional environmental laws</i> in the region.
Shippers	Out of 27 respondents, twenty one experts from the shipping sector disclosed that <i>unauthorized anchor zones</i> and <i>shipping routes</i> , are the activities with high conflicts in the region. Of this, 18 respondents indicated that these activities, however, affect <i>marine habitats and biodiversity</i> in the region. Due to this challenge, 12 respondents proposed the enforcement of <i>regional environmental laws</i> to help regulate all the anchor zones and shipping routes.

Fisheries	The fishery sector provided 15 responses. Fourteen specified that <i>artisanal</i> and <i>commercial fishing</i> are the activities with most conflicts in the region. Twelve revealed that the above-mentioned fishing activities directly affect the <i>ecosystem</i> and <i>ambient water quality</i> . As a result, 6 respondents proposed <i>national laws</i> to regulate artisanal and commercial fishing in the region.
Ports and Harbors	At the ports, 6 out of 10 respondents raised the concern that <i>vessel anchoring zones</i> and <i>fishing</i> usually conflict with each other. Four respondents further stressed that these activities affect <i>marine life</i> and the <i>environment</i> . In terms of future prospects, 4 respondents suggested the <i>creation of maritime zones</i> to help minimize fishing and anchoring conflicts in the region.
Oil and Gas	The oil and gas sector provided 23 responses. Nineteen indicated that <i>oil and gas exploitation</i> and <i>aggregate dredging</i> are the activities with high conflicts in the region. Twelve disclosed that such activities <i>pollute the marine environment</i> due to inadequate sanctions and regulations. In terms of future prospects, 6 respondents proposed <i>regional environmental laws</i> to regulate aggregate dredging activities in the region.

Having these results, an evaluation was conducted by considering the highest number of respondents per question against the total number of respondents per category as presented below. In this research, this novel approach is termed as the *CEP theory*, quite distinct from the CEP analytical tool used for the primary analysis. Such evaluation criteria were, however, repeated for all category of respondents. The general outcome (findings) were presented in a matrix or bar graph to indicate the ultimate view of respondents in Figure 34.

$$\text{e.g., Oil and Gas} = \frac{\text{Highest No. of respondents} \times 100}{\text{Total number of respondents}} \quad \text{i.e., } \frac{19 \times 100}{23} = 82.6 \%$$

The preceding results implies that 82.6 per cent of the respondents from the oil and gas sector pointed to *oil and gas exploitation* and *aggregate dredging* as the major conflicting activities in the GoG region. Such findings were further assisted by a bar graph which enables each respondent category to be displayed at the left side in order to ascertain the ultimate view of respondents at the right side of the graph. This graph is in a form of a matrix and allows a vector analysis that would ordinarily be difficult to quantify (Milon *et al.* 2000).

- The quantitative results

Figure 34. Quantitative results.

6.8. Aggregation of quantitative and qualitative results

To summarize both qualitative and quantitative results of the study as uncovered in this discussion, the beneath formulae is used to determine the median values of both quantitative and qualitative results. In order to avoid multiple permutation effects of figures, the highest results in the quantitative findings were recorded.

Procedural symbols

Where: C_m = Median for Causes
 E_m = Median for Effects
 P_m = Median for Prospects
 QIR = Quantitative Results
 QIR = Qualitative Results

Underpinning principles

$$\text{Formulae for } Cm = \frac{QIR + OIR}{2}$$

Fishing and oil and gas + Fishing and reserves

$$\text{i.e., } \frac{100 + 90.5}{2} = \frac{190.5}{2}$$

Median value = 95.3%

$$Em = \frac{QIR + OIR}{2}$$

Marine habitats + Economic and social systems

$$\text{i.e., } \frac{100 + 60}{2} = \frac{160}{2}$$

Median value = 80%

$$Pm = \frac{QIR + OIR}{2}$$

Environmental laws + Stakeholder engagement

$$\text{i.e., } \frac{53.3 + 68.2}{2} = \frac{121.5}{2}$$

Median value = 60.8%

Interpretation of the primary findings

Following both quantitative and qualitative results, 95.3 per cent of the respondents revealed that *oil and gas, fishing and marine protected areas* constitute the highest degree of marine conflicts in the Gulf of Guinea marine region. As demonstrated in this result, it is noted that the three research problems identified in sections 1.1 through to 1.3., serve as a reflection of these findings.

Following the quantitative and qualitative results, 80 per cent of the respondents revealed that *economic systems, social systems and marine habitats* bear the effects of marine conflicts. In-line with this result, the conclusions in section 1.10., aligned some significant effects of maritime-based conflicts grounded in the facts presented in the identified research problems. Following this analysis, it prevailed that a degree of such effects correspond with the derived findings.

In the process of eliciting the right tools for preventing future conflicts and securing the marine environment, *environmental laws, stakeholder engagement, and regional cooperation* were highly opted for by 60.8 per cent of the respondents as future prospects. The gross outcome in view, demonstrates the staggering extent to which both qualitative and quantitative results exhibited insignificant overlap.

6.9. Summary

This chapter has inherently utilized the emergent themes that are associated with the research problems identified in chapter one to ascertain the proximate causes of maritime-based conflicts, their effects and prospects, and these themes include the common-interest conflict between Ghana and Togo on the ultra-deep Keta East block, the sovereign dispute on the maritime frontier between Ghana and Côte d'Ivoire, and the sea-use conflict between artisanal and industrial fishing vessels in Ghana. Based on qualitative data acquired from experts and technocrats of respective maritime agencies in the GoG region, the discussion revealed an immense exhibition of substantial knowledge and expertise from the key respondents tied to their various disciplines. Per the quotes of such respondents, the writer further notes that a number of recommendations provided in the discussion were found to be novel approaches in this research – helping to make use of the research theories and findings as source of reference. Such novelties are ascribed to the TMSP tools in this research capable of improving upon the environmental and socioeconomic conditions, in addition to the current and future needs of the

people in the GoG region. The findings in this chapter, however, emphasizes the degree to which social, economic and environmental challenges affects governance and civic conditions in the region as a result of unresolved maritime-based conflicts. Further noting that such outcomes additionally has the capacity of ascertaining the status quo of the marine environment and can also be used for educating practitioners, stakeholders and ocean users, particularly on the effects of maritime-based conflict. Concluding that in the primary survey, seven category of respondents provided 150 responses. Of this, 60.8 per cent of the respondents proposed regional cooperation, environmental laws and maritime zones to synergize with the contributions of the eight proposed geospatial frameworks established in chapter seven for a quality output. Noting the significance of additional knowledge in the change of human practice and environmental conduct, the causal-effect knowledge acquired in this chapter, complements the practical knowledge uncovered in chapter four and five in addition to the theoretical underpinnings presented throughout the study to augment the existing TMSP knowledge. As the discussion heads towards unveiling practical lessons from the empirical study, the subsequent chapter seeks to deliver the principal elements capable of constituting the proposed overarching geospatial framework with the capacity of addressing the emerging planning and implementation challenges in the said region.

Chapter Seven – Lessons and Recommendations

7.0. Overview

Chapter six, in retrospect, was focused on applying the requisite tools for addressing the research problems identified in chapter one, with the discussion centred on the maritime-based conflicts in the GoG region. In the process of obtaining desired responses to research question five and uncovering the ideal framework for the region, this chapter utilizes the geospatial planning and implementation challenges identified in chapter three as themes, to critically address the ensuing planning hurdles in the GoG region in light of the empirical lessons learned in this research. The debate in extension shed light on the planning complexities and challenges pertaining to funding and fund management, stakeholder engagement, joint agreement, political and legal support, data acquisition and plan implementation. Although these challenges are partially addressed in chapter three, each of the eight identified challenges, are presented in series of synoptic Tables outlining the favourable outcomes and specific areas to be improved. Since the principal objective sought to develop an array of geospatial (analytical) frameworks, fundamental (description) of each element presented in the synoptic Table, is defied. This implies that the identified limitations, was woven into the analysis – leaving no room for each limitation unaddressed. Nonetheless, the subsequent chapter enumerates the essential principles for the utilization and application of the proposed frameworks.

7.1. Proposed framework for addressing fiscal constraints

Table 14. Synopsis of GoG’s capacity to address fiscal constraints – Challenge one.

<p>Framework benchmark: This framework is focused on generating adequate funding to help engage required experts and stakeholders to advance the course of planning, undertake adequate research, revise the management plan, spearhead sustainable development programs and promote regional integration.</p>	
<p>Favourable outcomes</p> <ul style="list-style-type: none"> - Satisfactory MOU has curtailed potential external influence. - Public-Private Partnership has lessened the possibility of future financial challenges. - The planning process gained momentum as a result of preliminary funding. 	<p>Requires improvement / Limitations</p> <ul style="list-style-type: none"> - Absence of pre-financing mechanism to supplement the alternative financing mechanism. - Actions did not lead to defining the feasibility of alternative financing mechanism. - Lack of economic regulations for the management of accumulated funding.

As a process-driven mechanism, transboundary marine spatial planning, in its practical sense, requires adequate funding to accomplish meaningful engagement, particularly in the hiring of desired expertise and technical advisors in addition to successful execution of administrative duties (Section 3.5.1). The GoG region is not exempted in this task as this region is deficient in such capacity and decided to enter into a partnership with the German Federal Ministry for the Environment, Nature Conservation, Construction and Nuclear Safety to solicit funding in addition to some 40 per cent support from the Republic of Ghana and Côte d’Ivoire, respectively (Section 1.6).The term adequate funding, can be said to represent one of the enabling conditions for attaining successful planning for most transboundary regimes, and with such available funding in effect, helped the GoG region to accomplish some important administrative duties, including the hiring of desired expertise and technical advisors for the progressive workshops, preliminary and inception meetings as witnessed in the planning process. Stakeholders were not left out as financial resources were provided to help engage their

valuable input to the planning process – these include maritime agencies, academia and government agencies. Such actions in effect helped in minimizing fiscal challenges that may have hindered the spatial management process. In spite of the provision of such funding, the preliminary workshop and meetings witnessed further concerns from stakeholders – indicating their observation about the participating countries who never recognized regional planning as an utmost priority from the onset, merely because their authorities perceived the process as costly, which is why 100 per cent funding was not attained by the participating countries. Casting into the future, it looks promising for such provisional funding to attain a positive result, yet seeking additional funding becomes vital in this situation in case the actual funding source diminishes, as mentioned in section 3.5.1. To avert possible financial insecurity and undue burden for the planning regime, it is important to further embrace the user-fee revenue generation system discussed in section 4.4. It is also important to note that in soliciting additional funds from private entities and other international organizations through the MoU, this process therefore requires planners to define the feasibility of the alternative financing mechanism, as illustrated in Table 7. Following the successful attainment of this task, the acquired capital should be invested in a number of areas in accordance with the current Economic Regulation (Section 3.5.2). This suggests that as MSP has many areas of funding, the acquired capital is advised to engage experts and stakeholders, undertake administrative tasks such as policy initiatives, goals and objectives setting and the enhancement of sectoral coordination through conferences and fora. The acquired capital must further assist in revising the management plan, spearheading the sustainable development program and the provision of a strategic ocean governance framework, as required. This is believed to go a long way to augment the offshore investment and the interest of both ocean users and stakeholders.

According to Coastal Resource Center (2013), since 1990, the republic of Ghana has exclusively secured funding from USAID for the accomplishment of her ICZM program in addition to an Integrated Coastal and Fisheries Governance Initiative in the Shama district of the Western Region. In the desire to explore indigenous concerns about the impact of oil and gas operations in the said district, US oil giant Kosmos Energy, who are major players in Ghana’s oil and gas industry, provided additional funding in mid-2014 to conduct research and ascertain the environmental conditions of the district. Such development led to the Norwegian Oil for Development initiative, with additional funding to support the composition of the Western Region Spatial Development Framework (WRSDF), which assisted in providing detailed cadastral zones for the Western Region of Ghana. This series of funding for Ghana alone indicates the possibility of acquiring alternative financing for the Mami Wata MSP pilot project, either through the Global Environment Facility (GEF) or the International Monetary Fund (IMF).

7.2. Proposed framework for effective investment and fund management

Table 15. Synopsis of GoG’s capacity to manage funds and investments – Challenge two.

Framework benchmark: This framework is developed to ensure effective management of accumulated funds which are generally used for investing in the spatial management process, capacity building, deployment and monitoring of TMSP programmes and activities.

Favourable outcomes	Requires improvement / Limitations
- Critical investment geared towards geo-spatial data acquisition and analysis.	- Lack of economic framework for the management of accumulated funds.

- Capacity building was centred on identifying the youth for the spatial process.
- Other investment was prioritized on building human capacity through experts and stakeholder engagement.
- Advisory capacity and spatial revenue allocation medium was in deficit.
- Accumulated funds did not gear towards infrastructural development as well as provision of explicit criteria for achieving investment target.

In section 3.5.2, the discussion aimed at providing classification and definition to the customary fund management practices across the globe. This section in extension, provides the essential economic framework for the management and allocation of accumulated funds which is generally used for investing in the spatial management process, capacity building, deployment and monitoring of TMSP programmes and activities. To appropriately allocate such funds, distribution is suggested to take account of 100 per cent of average inflation including three projected years, and a three-year average output including projections for the next year (See figure 35 below). From the benchmark revenue, 50-70 per cent is allocated to the annual budget as it is received. Of this, a minimum of 70 per cent must go into 14 priority areas for infrastructure development and capacity building; the remainder is invested for longer periods. Thirty to fifty percent of the benchmark revenue shall be placed in a wealth fund investing in future generations, research, policy development and contingency planning. Of this, a minimum of 30 per cent must go into the policy and contingency fund, and 20 per cent to the heritage fund after quarterly auditing. To ease the burden off the planning authorities, the exact mix and management of the fund may be executed by the planning agencies in the management area. It is worth noting that the fund allocation criteria provided, are a novelty derived in this research, based on the current practices across the globe.

Figure 35. Spatial fund allocation (Derived in this research).

- Investment strategies (a key message)

Prioritizing significant areas for infrastructure development and capacity building, merely encompasses the expenditure of the accumulated funds, which is believed to help invest in programs and activities, both actual and potential. In application of Art. 164 of the Convention, such investments may adequately gear towards policy development, research and development programmes, the energy and the mining industry, contingencies, educational scholarships and Transfer of Marine Technology. Correspondingly, the planning agencies may further audit single activities such as plan preparation, approval, monitoring and evaluation to help address current deficits and marginal profit subsequent to implementation. Noting that providing such an enabling environment for future investment, wholly or partly, assist in resolving significant economic challenges of the Parties involved in the planning process. Pinnacle (2016) further provides criteria for achieving such investment targets.

- Analyse situation: Know your current financial situation, risks and expectations. These insights will assist your investment advisor to serve your interest.
- Determine fund allocation: At this stage, your investment advisor helps you to diversify your assets to attain your objectives and avoid future risk.
- Develop an investment plan: This plan entails a multidisciplinary and systematic approach to investment.
- Implement plan: To this end, your investment advisor will work with you to take your fund allocation and written investment plan to execution.
- Measure and adjust: Regularly write queries / reports and communicate effectively to ensure that your investment advisor understands your concerns and makes adjustment based on the changes in your current situation.

Figure 36. The investment strategies in TMSP: A continuum. *Source:* (Styles, 2011).

7.3. Proposed framework for enhancing stakeholder engagement

Table 16. Synopsis of GoG's capacity to enhance stakeholder engagement – Challenge three.

Framework benchmark: This framework has been developed to assist in producing efficient and effective results for the Mami Wata MSP Pilot Program, thereby enhancing the existing knowledge and understanding about effective planning and management, build cohesion and achieve equal benefits to advance the course of planning and implementation in the region.

Favourable outcomes

- The process engaged inter-agency meetings and sought approval through bureaucratic system of governance.
- Effective communication and collaboration was recognized in all the meetings.
- Based on a high degree of understanding, agreements were reached at the fora.
- Individual inputs and recommendations were responded to and documented.

Requires improvement / Limitations

- A number of stakeholder groups were excluded in the arranged meetings and fora, and these include ocean users, indigenes and oil firms.
- Absence of ad hoc engagement of MSP experts subsequent to the arranged meetings and fora.
- Participants felt a number of neglected concerns could have enriched the planning process.
- Instances of lack of transparency in terms of funding and source of stipends for participants.

In transboundary marine spatial planning, stakeholder engagement is one of the most influential tools and is arguably the most challenging management process. This challenging process is literally attributable to several participants drawn from various discipline with divergent views and expectations (Section 4.4). Integral to the MSP Pilot Program in the GoG region is the utilization of stakeholder engagement, which ultimately sought its approvals from respective governments in the region (Section 3.5.3). Although such an approach helped to engage academia, policy actors and relevant maritime agencies, other stakeholder groups such as ocean users, fisheries associations, fishmongers, District, Municipal and Metropolitan Assemblies, the Navy, Civil Society Organizations, oil firms and petroleum associations, were unexpectedly excluded in the arranged meetings and workshops, which adversely impedes meaningful engagement by disengaging pertinent views and impressions of other stakeholder groups. Such actions in effect, warrant that certain groups of participants become notable drivers of the process, to the detriment of the masses being served (Ibid). Further, the distinctiveness and significance of local and traditional insights cannot be underestimated due to their ability to reach complementary goals. Hence, using scientific input alone as the only decision-making tool barely reflects local and traditional views and usually leads to alienation of the public, with a significant degree of apathy demonstrated to oppose scientific predictions (Section 5.1). This notwithstanding, ad hoc engagement of a collective group of experts subsequent to the arranged meetings, was also undermined by the planning group. Considering scientific knowledge as an essential tool for identifying topographic features and habitats characterization, its deprivation therefore has the potential of triggering ineffective planning, as witnessed in the case of the ESSIM management regime, discussed in section 4.8. This suggests the importance of engaging a collective group of experts with prerequisite skills to ensure that each activity carried out in the planning and implementation process is standard for the successful attainment of joint objectives. Such an approach equally recognizes the significance of scientific input as a means of assisting developing countries to improve upon their capacity for collecting, analysing, and assessing information in support of sustainable development, as enshrined in Chapter 17 of Agenda 21. In the spirit of strengthening such an agenda, Art. 13 of the Land-Based Sources and Activities Protocol of the Abidjan Convention, additionally encourages Member States to develop relevant tools for the planning of national activities in a manner that will minimize harmful effects on the marine environment, and such development should include scientific research and data, transfer of marine technology, capacity building and infrastructural development (Section 5.5).

According to Alley (2016), in spite of ongoing stakeholder differences and divergent expectations, practitioners must seek to devise an array of flexible engagement strategies in support of such diversity. One of these flexible engagement strategies is the consideration of a Marine and Scientific Advisory Committee with representation from each stakeholder group, including private entities, industries, community members and non-commercial ocean users, to share experiences and inputs as was applied in the North Pacific Coast (Section 4.4). Such a co-management approach, in effect, utilizes each stakeholder group in the planning process as key decision makers to consolidate Goal 16 of the 2030 Sustainable Development Goals. This goal, however, seeks to ‘promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels’ (Section 1.5). In the process of exercising such a co-management strategy in the GoG region, the regional authority and central governments of respective countries shall be endeavour to assess the competencies, competitiveness and capacities of the stakeholder groups prior to their invitation for further input. As illustrated in Figure 37, such a stakeholder engagement hierarchy has been developed based on a compilation of stakeholder engagement practices known to the IOC (See msp.ioc-unesco.org, 2020). This emphasizes why the emerging scope and extent of stakeholder engagement approaches around the world, is largely dependent on the political, cultural and legal requirement of respective States (Ibid).

Figure 37. The stakeholder engagement hierarchy (Derived in this research).

Critically, this research notes that countries such as Côte d’Ivoire and Benin, follow the approach adopted by Ghana and delivered to that end. As part of the planning process, effective communication and consultation was identified as one of the influential factors constituting strong inter-agency participation and a good example is referred to a communique shared by the Abidjan Convention, outlining a draft roadmap of the planning process at the COP 12 Conference in Abidjan. With regards to consultation, the Convention further solicited scientific input from academia to assist in uncovering an overarching geospatial framework for the region, as also considered in this study – helping to justify the strives made from end to end.

7.4. Proposed framework for accomplishing effective joint agreement

Table 17. Synopsis of GoG's capacity to accomplish effective joint agreement – Challenge four.

Framework benchmark: In the spirit of attaining equal and proportionate outcomes for Member States in the GoG region, this framework is developed with adequate management tools for the execution of effective joint agreement and addressing untimely challenges as well as the lapses in communication, as identified in this research.

Favourable outcomes

- High degree of cooperation and understanding between the State Parties.
- Desirable inter-agency collaboration in the region.
- Solid diplomatic ties among respective governments.

Requires improvement / Limitations

- Lack of a benchmark criteria for entering into effective joint agreement.
- Insufficient management tools for addressing untimely challenges.
- Absence of effective communication for the attainment of general consensus.

As part of the challenges hindering regional planning effort particularly the emerging maritime boundary disputes in the GoG region, in our quest to overcome such impediments, cross-border agreements have been proposed as a technical mechanism for enhancing regional cooperation and averting succeeding discrepancies (Section 2.7). These agreements are flexible in nature, require no ratification and are more recognized in regional and urban planning (Ibid). In these agreements, a management framework representing benchmark criteria is generally applied at the preliminary stage to help provide protection for biologically and ecologically sensitive areas, the ecosystem and its physical processes, separate conflicting human activities and realign incompatible activities, protect natural values in the marine environment and minimize the effects on nature and human uses and, preserve the marine environment in its natural state undisturbed by humans except for scientific research (Sections 2.7 and 3.5.4).

As several coastal States employ diverse joint agreement schemes and lose sight of utilizing customary joint agreement procedures, Table 18 provides a universal framework or a set of criteria capable of fostering effective joint agreement. This framework has been developed in a manner that it possess sufficient management tools for addressing untimely challenges – both actual and potential. Further, its characteristics and elements have the ability to enhance policy confidence, encourage blue economic growth, and conserve and secure the marine environment. To successfully accomplish each element of these key criteria, section 2.8.1 emphasizes the need to engage technocrats and classify this class of experts who have the prerequisite skill to participate in the process into a compact hierarchy. This implies that in the crafting of effective joint agreements, engagement of skilled personnel, comprised of maritime delimitation experts, marine spatial planning experts, geographic information system experts and admiralty legal advisers, are expected to assist in the conduct of oversight responsibilities through a series of communications with the aim of balancing primary needs and satisfying general expectations of the citizenry (Section 3.5.4). In order to open windows of opportunities for a true consensus to surface, effective communication in the conduct of oversight responsibilities, must be subsumed by respective governments involved in the agreement process (Ibid). Considering Ghana and Côte d'Ivoire as an example, in spite of the successful accomplishment of their strategic partnership agreement mentioned in section 1.4, a number of elements in the derived criteria were underemphasized in the said agreement. Hence, the need for the Republic of Ghana, Togo and Benin to adopt this benchmark criteria in their future planning and cooperation strategies as the MSP pilot program progresses towards the approval stage, unaccompanied by an existing unitization agreement between the respective States.

Table 18. Management criteria for entering into an effective joint agreement (Derived in this research).

- Develop joint objectives and provide sea-use management and marine contingency plans, including a comprehensive delimitation and zoning plan.
 - Enact Financial Resource Act and provide Economic Regulations for mobilizing license fees, permit fees, user charges, development charges, taxes, environmental depletion and pollution charges, surveillance and enforcement sanctions (e.g. fines, cancellation of permits).
- Surcharges and fines must assist in capacity building and developing sectors such as the oil and gas, wind energy, aggregate extraction, tourism, research and also manage predicaments such as oil pollution, climate change and environmental degradation.
- Your area maps and site plans must entail operational zones such as sand and gravel extraction zones, offshore wind and energy production zones, oil and gas production zones as well as tourism and research zones.
 - Share management skills and set standards for ambient water quality, sediment quality and provide expertise for Transfer of Marine Technology.
 - Enact an Environmental Degradation Act to manage marine pollution, illegal mineral exploitation, illegal dredging and other illegal operations.
 - Constitute a multidisciplinary research organization to provide visionary ideas for the marine environment, and to enable the application and translation of sea use planning concepts and methodologies into a more feasible outcome.

As earlier discussed, in the execution of effective joint agreement, political and legal support cannot be underestimated. As such, deficiency of this nature has the potential of defying successful implementation, which is exemplary in the ESSIM management regime (Section 4.7). As part of the ESSIM planning process, planners organized a series forums on a piecemeal basis without the approval of the Fisheries and Oceans Minister, leaving the plan in limbo (Ibid). This helps to justify the significance of political and legal support in the spatial development process.

7.5. Proposed framework for enhancing political and legal support

Table 19. Synopsis of GoG's capacity to augment political and legal support – Challenge five.

Framework benchmark: This discussion aims at eliciting appropriate management tools for developing a strategic framework capable of mitigating contemporary challenges pertaining to political and legal support in the Mami Wata MSP planning and implementation.

Favourable outcomes	Requires improvement / Limitations
<ul style="list-style-type: none"> - High optimism by State hierarchies to channel the course of local planning to a regional approach. - Satisfactory assistance by the Abidjan Convention Secretariat (the authority). - Enactment of the regional Integrated Coastal Zone Management Protocol. 	<ul style="list-style-type: none"> - Decree for appointing political authorities with the aim of securing successful planning and implementation was in deficit. - Inadequate management tools for addressing issues pertaining to political support. - Absence of a strategic framework to serve as a benchmark for enhancing political support.

- Underpinning MSP related legislation
by the State Parties.

- Lack of policy continuity.

Since the enactment and codification of the 1982 United Nations Convention on the Law of the Sea, a significant number of coastal States in the GoG region have ratified this Convention, giving rise to legitimate environmental management and political control (Mensah *et al.* 2006). According to Kraan (2009), the sovereignty of this marine region is a hybrid of both traditional and political governance, in spite of the existing political supremacy. This implies that in the formulation and implementation of spatial initiatives, the system of governance in this region gives recognition to decentralization management stressed in section 3.5.6, which in effect, has the capacity of minimizing the impact of neo-colonialism due to the traditional interest in heritage protection (Mensah *et al.* 2006). Following the ocean governance structure as presented in Figure 38, the cumbersome nature of this structure is a general reflection of the routine governance and management system (*modus operandi*) in this marine region (Kraan, 2009). Hence, the discussion in this section, aims at eliciting appropriate management tools for providing a strategic framework capable of mitigating contemporary challenges pertaining to political and legal support in the Gulf of Guinea marine region, not to discuss the ocean governance arrangement *per se*, as addressed in chapter two. Kraan (2009) presents an organogram of the current ocean governance structure as practiced in the said region. In this structure, the “Figure Index” at the top left corner, is directly linked to the organizations and authorities in the region and their varying degrees of influence in a hierarchical manner.

Pertaining to political and legal support, outcomes matter, yet favourable outcomes matter most. Highlighting the favourable outcomes chalked by this region, they include the enactment of the Pointe Noire Protocol on Integrated Coastal Zone Management, which seeks to promote regional cooperation among Member States as part of the provision made by the regional authorities (Section 1.6). Emphasizing the series of national legislation passed to fortify the Pointe Noire Protocol, these include Ghana’s Land Use and Spatial Planning Act, Côte d’Ivoire’s Maritime Zones and Delimitation Act, in addition to the republic of Benin’s Maritime Delimitation Decree (Ibid). In spite of such legislative underpinnings, coordinating spatial initiatives to enhance political and legal support has been trivialized by the aforementioned countries, as evident in the said legislations. This implies that there is currently a substantial lack of strategic framework capable of enhancing political and legal support in this region, as practiced by the European Member States through the Marine Strategy Framework Directive (MSFD), which aims at achieving satisfactory environmental status by 2020. Although the MSFD addresses such fundamental issues to some extent, undermining such concerns poses much threat to the MSP process in the GoG region. ‘Attesting to many accounts of regional MSP, the planning process is usually successful but with an abrupt failure in transition to implementation – mainly due to the lack of political and legal support’ (Section 3.5.5). The preceding discourse, justifies the significance of a strategic framework in support of political mandates to sustain a management plan, as also noted section 3.5.5. In the process of enhancing political and legal support in the United Kingdom for instance, the parliament, in its decree, conducted a thorough legislative amendment of eight sub-regions which in effect, assisted in providing a satisfactory framework for political support and a mandatory implementation compliance model for the entire United Kingdom (Ibid).

Abidjan for instance, a great number of participants proposed the Abidjan Convention as their planning authority. As noted and agreed upon by the Member States, it deems fit for this management area to adopt a multi-sectoral implementation approach with the view of engaging sectoral steering committees and an interagency task force to minimize the workload on the implementation authority (Section 3.1). Ehler and Douvere (2009) note that due to the challenge of having to engage all sectors in the implementation process, the adaptive management approach in this sense becomes vital, since this approach assists individual sectors to learn from their experiences prior to implementation.

7.6. Proposed framework for managing complexities in the planning process

Table 20. Synopsis of GoG’s capacity to manage planning complexities – Challenge six.

<p>Framework benchmark: In the spatial development process, managing planning complexities cannot be underemphasized since this has the potential of ruining implementation fortunes. As a consequence, this framework seeks to address the impending geospatial planning challenges in need of critical attention, so as to curtail future complexities in the planning process.</p>	
<p>Favourable outcomes</p> <ul style="list-style-type: none"> - Decentralization system of governance in this region is a key component for managing planning complexities. - Minimal number of coastal states involved in the pilot program has the potential of curtailing possible conflict of interest. - The use of a planning authority and state liaison agencies, has the potential of mitigating planning complexities. - Zone designations and management maps are very explicit. 	<p>Requires improvement / Limitations</p> <ul style="list-style-type: none"> - No defined roles, aptitudes and expertise of the engaged practitioners. - National legislations not consonant with cross-border agreements. - Lack of MSP objectives in the planning process.

In the spatial development process, two desired approaches have been acclaimed by practitioners, which include sectoral planning and zone planning approaches (Maes, 2008). Sectoral planning as we know, has been recognized as the most traditional form of management which incorporates unsystematic spatial and temporal measures for attaining satisfactory environmental status, stakeholder engagement including political, technological, legal and economic well-being of the planning area (Katsanevakis *et al.* 2011; Kenchington and Day, 2011). Zone planning on the other hand, is characterized by setting management objectives akin to a specific management area, with the aim of conserving valuable habitats (Day *et al.* 2008; Kenchington and Day, 2011). It also grants exclusive rights to specific uses without the interference of other operational activities, yet, it appears most zones are not exclusive as perceived by practitioners due to their inability to prioritize multiple uses (Katsanevakis *et al.* 2011; and Olsen *et al.* 2011). The effectiveness of the zone planning approach, is reflected in the separation of conflicting uses of oil exploitation and limestone mining at the Great Barrier Reef Marine Park (Ibid).

One of the key defining moments in both sectoral and zone planning approaches, is the management of planning complexities. Such complexities usually emanate in the absence of a robust MSP planning team with defined roles, aptitudes and expertise (Section 3.5.6). In keeping with this task, authorities could begin such an exercise by drawing together

practitioners from relevant agencies within the planning region through previous experience. Stressing the significance of a precursory exposure, this could as well provide an impetus for the organization of suitable practitioners within the remit of the existing cross-border agreements, and such agreement, is expected to be in consonance with respective national laws in order to avert ensuing disparities between national legislations and international treaties (Section 3.5.6). Hence, the establishment of a transnational liaison commission to solitarily regulate and coordinate the engaged practitioners, may be additional option (Ibid). Table 21 below, categorically defines the functional roles, aptitudes and expertise of the practitioners to be engaged in accordance with the planning process.

Table 21. Specific roles, aptitudes and expertise of MSP practitioners. *Source:* (Ehler and Douvere, 2009).

Functional Role	Knowledge & General Aptitudes	Programme Skills	Administrative Skills
Program Management	Strategic Thinking about Space and Time	Planning Financing and Project Implementation	Organizational Management
Authority	Knowledge on MSP Legislations & Protocols	Legal Analysis	
Analysis	Analysis about Space and Time	GIS and Spatial Database Management & Analysis	
Planning	Conceptualization on Spatial Thinking	Assess Problem, Design Strategy & Develop Plan	Coordination
Implementation	Conflict Resolution	Negotiation	
Monitoring/ Evaluation	Cause-and-Effect Thinking	Monitoring Planning Assessment Methods	Evaluation
Communications	Strategic Communication	Product Planning Product Development	Routine Communications

In managing planning complexities, one other task is to consider defining appropriate management objectives, as discussed in section 5.6. Such assertion is premised on the assumption that, in the crafting of regional plans, planning groups, stakeholders and civil society organizations recurrently tend to disagree on the planning objectives due to the enormity of political and economic interests, and such contentions critically impede the efficiency of the planning process. As such, management plans may comprehensively be crafted to focus on a more sustainable output, yet, they solely reflect the present objectives and fail to balance the primary needs of ocean users, civil society and stakeholders. To curb such an impediment in advance, it is imperative to assess future risk or what might go wrong in the planning process, following an explicit definition of the proposed management objectives (Ibid). Indeed, six of such forward-looking objectives, are defined at the base of section 6.4. Section 3.5.6 notes that when more objectives are aligned based on a substantial geographical scope, more effort and resources are required to execute such objectives, as witnessed in the case of North Pacific Coast (Section 4.4). Managing such complexities also requires the stated objectives to be focused on more specific jurisdictions, as expressed in section 3.5.6. This form of management is generally referred to as the decentralization system of management (Ibid).

7.7. Proposed framework for mitigating data acquisition and management challenges

Table 22. Synopsis of GoG's capacity to mitigate data acquisition hurdles – Challenge seven.

Framework benchmark: In seeking information relevant to marine spatial planning, data or spatial inventory is considered vital to the process. Complete data, however, ensures informed long-term decisions. Thence, this section in extension provides a strategic framework for mitigating spatial data acquisition, management and analysis challenges being encountered by the Mami Wata MSP planning and development process.

Favourable outcomes

- Organization of inter-agency meetings to ascertain the amount of data acquired.
- Effective inter-agency coordination was witnessed in the planning process.
- A number of presentations were made by the participating agencies to outline their acquired data for effective output.

Requires improvement / Limitations

- Instances of data detention by some respective agencies was discussed at the meeting.
- Participants were uncertain about the amount of geospatial data needed for the planning process.
- Lack of Geographic Information System (GIS) experts for the spatial development process.

Generally, acquiring and managing spatial data across various domains comes with an array of challenges, ranging from data detention difficulties, lack of appropriate expertise for data acquisition, management and analysis, in addition to the uncertainties surrounding the amount of data required for the planning process (Section 3.5.7). Noting the significance of science and technology in the acquisition, management and analysis of spatial data, Alley (2016), it is apparent that the aforementioned challenges, were triggered by the lack of general knowledge in spatial data acquisition, management and analysis in the region. Such an argument lies on the fact that, in spite of the intermittent organization of GIS education at the University of Ghana, participants demonstrated varying scientific knowledge in the planning process, losing sight of appropriate data acquisition procedures, management and analysis. The planning process somewhat affixed the existing data gathered from various agencies, with uncertainties centred on the amount of data needed to be applied now and in the future. Such management measures consequently led to the detention of substantial data by some respective agencies due to their interest in using such scientific information for private benefits (Section 3.5.7). Critically, experts have raised further concerns about the viability of the acquired outmoded data and its current application to the spatial development process. Impediments of this nature highlight the need to broaden the existing knowledge and skills in data acquisition, management and storage, as well as visualization and analyses of geospatial information, as detailed in section 3.2, in addition to creating an online portal to enable participants who are habituated to the efficient use of time, to access geospatial information, particularly on the use of GIS tools for the creation of ecological data layers. Determining carrying capacity in this direction, could substantially serve to mitigate the challenges in data acquisition, management and analysis, as witnessed by the case of Mami Wata MSP planning and development process. Undoubtedly, demonstrating governance commitment to the building of such capacity does not only offer credit to the State Parties, but it's an indication of a shared responsibility to make planners self-reliant in order to provide benefit for stakeholders and the citizenry at large. Acquisition of such ample knowledge, may as well assist in the determination of both current and future incompatibilities (potential user conflicts) in the area, in addition to the identification of significant environmental impacts (Section 3.2.1). In the Eastern Scotian Shelf for instance, this approach saw a series of data gathering efforts in support of the integrated management initiatives, and further assisted in developing future planning objectives to augment the existing spatial initiatives (Section 4.7).

One additional concern raised at the plenary meeting, pertains to the issue over how much data should be applied now and in future, which has become a bane for the planning process (Section 3.5.7). Instructively, projecting current and future trends in the management area is crucial to the planning process, and this task in effect, enable planners to develop trend scenarios for each sector (Section 3.3). Such scenarios in view, determine the number of years taken by each sector to occupy extra marine space in order to inform planners about the degree of space-expansion by each sector in the next 5 to 100 years. These scenarios further indicate when, where and how human and non-human activities will transpire in a specific area, and also takes account of new demands for marine space, as elaborated in sections 3.3 and 3.2.1.

7.8. Proposed framework for averting implementation hurdles

Table 23. Synopsis of GoG’s capacity to avert implementation hurdles – Challenge eight.

<p>Framework benchmark: On a consistent basis, plan implementation has been perceived by practitioners as more challenging than the planning itself – with often lasting frustration to planners and practitioners. As a result, this section provides an implementation framework with the capacity of addressing the impediments in implementation compliance and enforcement, the insufficiencies in communication and capacity building.</p>	
<p>Favourable outcomes</p> <ul style="list-style-type: none"> - Proactive measures have been taken to prioritize funding for both planning and implementation. - Satisfactory political support from both regional and national authorities. - The presence of marine police and Navy, may act as an implementation taskforce. - Provision of an implementation plan is progressively underway. 	<p>Requires improvement / Limitations</p> <ul style="list-style-type: none"> - Lack of implementation compliance, enforcement measures and implementation agreement. - Absence of implementation legislation by the State Parties. - Absence of capacity building for implementation at the preliminary phase of planning. - Transition from planning to implementation has been slow, with little correspondence.

Per the recounts of the engaged stakeholders in the region, “the Mami Wata MSP Pilot Program is viable and promising”. Despite such optimism, as of March 2020, transition from planning to implementation has witnessed little attention and correspondence. This notwithstanding, there is also significant lack of capacity building for implementation at the preliminary phase of planning, with absence of implementation legislation by the State Parties. One other missing element, is implementation compliance and enforcement, in addition to the absence of implementation agreements. Prioritizing such agreements means prioritizing your management objectives to ultimately assist in reaching your implementation goal. This suggests that further negligence to the current disorientation of the planning process, may aggravate implementation hurdles. In an interview with a participant from Ghana’s Land Use and Spatial Planning Agency, she recounted that the identified challenges, have left several stakeholders in limbo, particularly on the issue of a proposed implementation framework for averting future eventualities. Consequently, aggregation of these challenges has tainted indigenous perceptions towards future implementation.

Undoubtedly, the preceding argument has demonstrated that the output of a spatial management plan, hinges on the optimum input of planners, stakeholders and policy actors. Such a declaration is inspired by the fact that since the commencement of the Mami Wata MSP Pilot program in 2018, transition from planning to implementation has been creeping, with little

correspondence among planners, stakeholders and policy actors, particularly for the realization of compliance and enforcement measures. Section 4.4 in extension, notes that implementation without compliance and enforcement, is a recipe for failure. Hence, the need for robust measures to achieve optimum compliance. Per the philosophy of Ehler and Douvere (2009), achieving optimum compliance, however, confirms the accomplishment of the planning objectives; it further addresses the implementation shortfalls and provides the projected outcomes. Aside from the issue of optimum compliance, one other impediment to implementation is weak inter-agency support (Ibid). Attesting to many accounts of regional MSP, the planning process is usually successful, but with an abrupt failure in transition to implementation – mainly due to lack of inter-agency support, in addition to legal and political support (Section 3.5.8). Such inefficiency may be attributable to policy deficits and the need to understand the key concepts of integrated management practice (Section 4.7). Impediments of this nature consequently compelled one participant from the Ghana Maritime Authority (GMA) to outline the significance of utilizing a multiple sectoral implementation approach, as highlighted in section 4.7, and further proposed the utilization of institutions such as the Land Use and Spatial Planning Agency (LUSPA) who are specially mandated by law, as well as the Environmental Protection Agency (EPA), who are also mandated to conserve and sustain the environment as the implementation agencies. In support of such a proposal, Ehler and Douvere (2009) note the importance of using effective correspondence to engage auxiliary agencies such as fisheries, ports and harbours, oil and gas, shippers and the navy, for the implementation process. Such a line of action helps the engaged parties to focus on carrying capacity for implementation at the preliminary phase of planning in order to avert potential hurdles and enhance inter-agency cohesion (Ibid).

Per the analysis conducted in chapter four concerning the ESSIM and MaPP management regimes, it is instructive to note that engaging several entities for implementation also comes with an array of challenges, particularly in the spirit of satisfying diverse interests and expectations. Having to satisfy some principal interests and expectations of stakeholders, civil society and policy actors in the MaPP region for instance, an implementation agreement was reached which included the federal government, First Nations and the MaPP Implementation Technical Team (Section 4.4). Although this agreement experienced some significant trade-offs and failed to emphasize the implementation timelines, it is worth emulating by the GoG region in place of implementation legislation. One supplemental agreement, is the compliance and enforcement agreement between the implementation agencies and ocean users. Ehler and Douvere (2009) share the potential of such agreements in reaching optimum compliance, particularly through the utilization of an inter-agency taskforce. This follows the adaptive management process which is conducted to modify what is learned about the implemented plan, including information about the effect of previous management actions (Section 3.4). In the assertion of Kyriazi *et al.* (2013), such processes include plan revision, monitoring and evaluation, which can be incorporated by the GoG region with coordinated effort from the implementation agencies. To effectively modify and strengthen an already implemented plan, Kyriazi *et al.* (2013) mentions that in accordance with the power vested in the implementation agencies, an assessment is conducted in their capacity to ascertain the accomplishment of the stated objectives. Such capacity, shall not only address the challenges in implementation compliance and enforcement, as well as the insufficiencies in communication, but shall otherwise seek to fast track the implementation process and add value to the existing institutional arrangements.

7.9. Summary

This chapter in perspective, has discussed an extensive body of literature relevant for addressing the geospatial planning and implementation demands impeding the Mami Wata MSP Pilot Program in the GoG region. In light of the derived theories and analysis, eight valuable analytical frameworks have been developed for tackling challenges pertaining to inadequate funding prospective for engaging practitioners and stakeholders to advance the course of planning, undertake research, revise the management plan, spearhead sustainable development programmes and promote regional integration, in addition to a robust fund management framework for ensuring effective management of accumulated funds capable of investing in the spatial management process, capacity building, deployment and monitoring of planning activities. This follows a cross-border stakeholder engagement framework effective for producing efficient results for the regional planning process, thereby enhancing the existing knowledge and understanding about cohesion building for the achievement of equal benefits to advance the course of planning and implementation. In the spirit of attaining equal and proportionate outcomes for the States Parties concerned in the planning process, a universal joint agreement framework was additionally developed with adequate management tools for the execution of effective joint agreement useful for addressing untimely challenges capable of striking the State Parties. Further discussion aimed at eliciting appropriate management tools for the provision of a strategic framework efficient for mitigating contemporary challenges pertaining to political and legal support. In addition to political and legal support in the spatial development process, managing planning complexities on the flip side, was also considered crucial since it also has the potential of ruining implementation fortunes. This discussion consequently called for the need to develop a systematic planning framework that seeks to address pressing challenges pertaining to planning complexities. In seeking information relevant to the spatial development process, data or spatial inventory, is also considered vital since it ensures informed long-term decisions. As a result, a further discussion aimed at providing a strategic framework for mitigating spatial data acquisition, management and analysis challenges confronting the planning process. It is worth emphasizing that, one cannot talk about data acquisition and application without considering the implementation of the management plan in general as this process is often perceived by practitioners as more challenging than the planning itself – with often lasting frustration to planners and practitioners. Thence, the debate in the concluding section assisted in providing a stringent implementation framework with the capacity of addressing the impending challenges in implementation compliance and enforcement, as well as the insufficiencies in capacity building as observed in the management area.

To consolidate the eight derived analytical frameworks, other lapses identified in the Mami Wata MSP planning process have partially been addressed within the body of literature and analysis, making the framework an overarching piece. This indeed heralds the accomplishment of study objective five. As presented in the eight synoptic Tables, the design of this analytical framework and its application, illuminated the favourable outcomes of the Mami Wata MSP planning process and it's identified drawbacks in need of further improvement, following a host of insightful recommendations to enhance the planning process as it moves through implementation. The discussion further highlights important lessons that can be learned and applied by stakeholders and practitioners in the region. So far, the discussion reveals that three of the identified challenges which pertain to lack of effective joint agreement, ineffective stakeholder engagement, as well as the deficit in political and legal support, are posing much threat, with greater chances of ruining implementation fortunes. As a consequence, further assessment to overcome such challenges additionally informed several un-divulged issues that could possibly hinder practical application of the draft plan more

generally. This notes the significance of the eight proposed conceptual frameworks serving as a piece of benchmark for assisting policy actors, stakeholders and ocean users in averting potential future challenges. As the discussion heads towards conclusion, the next chapter conclusively seeks to ensure that all the “what” and “why” questions are answered in a meticulous manner.

Chapter Eight – Conclusions and Implications

8.0. Conclusions

As research demands, this thesis has presented an extensive body of knowledge and insights on transboundary marine spatial planning that will assist practitioners, those in academia and policy actors. The ideas presented, however, stressed a host of theoretical and practical lessons to be learned and applied by practitioners and non-practitioners. Primarily, the eight sequential chapters delivered, sought to address five principal objectives. Of these, the first chapter reviewed a body of literature and identified the benefits and importance of transboundary marine spatial planning to the Gulf of Guinea marine region – helping to justify the adoption of the TMSP concept. This led to the consideration of ocean governance arrangements in the GoG region to underscore the significance of maritime boundaries and joint agreements as supplemental mechanisms for preventing maritime-based conflicts. In the process of deriving the essential jurisdictional framework, the third chapter further addressed the emerging challenges confronting TMSP practice across settings while the fourth chapter analysed two management regimes to uncover the strengths and weaknesses of TMSP practice. In light of the analysis conducted in the fourth chapter, some eight underemphasized dimensions of TMSP was uncovered in the fifth chapter. The sixth chapter in extension, utilized the theories acquired throughout the research to unravel the planning needs and advance the TMSP knowledge in the GoG region. In accordance with the aim of deriving an overarching geospatial framework to assist in preventing the cyclical nature of maritime-based conflicts in the region, the seventh chapter additionally adopted a series of innovative approaches and propositions in the research to constitute the eight proposed frameworks. Following this explanation, it has become apparent that the principal objectives of the study presented in section 1.7.1., have been duly accomplished in chapters 1, 3, 4, 5 and 7 respectively. In the subsequent sections, the discussion delves into the utility and application of the proposed frameworks and its implications for the entire GoG region, following a delivery of additional research input to the body of knowledge, in addition to presenting the fundamental elements requiring further research.

8.1. Post-implementation principles for the utilization of the proposed frameworks

It is believed that implementation without compliance, is a recipe for failure. An obstacle of this nature, calls for the need to enplace a set of principles to operate an already implemented plan so as to avoid post-implementation challenges. The need for these principles was partially underscored in section 3.3 and they may equally be embedded in the plan revision process spelt-out in section 3.5.8. The preceding argument implies that this section, articulated an array of key lessons arising from this research to develop a set of post-implementation principles capable of informing the operationalization of the management plan subsequent to implementation. These principles, are discussed in detail and primarily focus on how to prevent future conflict, maximize regional cooperation, promote peaceful co-existence by enhancing coordination, protect and develop the environment to encourage investment, and ultimately, prevent environmental threats by ascertaining the future demographics of the area. The subsequent figure presents in detail the various principles effective for governing the prospective Mami Wata MSP Pilot Program.

Figure 39. Post TMSP implementation principles (Derived in this research).

- *Prevent post-implementation conflict* - by creating synergies between sectors and administrations in each country and further balance development in all activities with the use a single instrument, protocol or Convention.
- *Maximize regional cooperation* - by providing regulations to overcome disintegration and ensuing challenges that can impede management efforts. This management principle should also help ascertain the limitations in the management plan with the potential of integrating sectors and administrations in each country.
- *Promote peaceful co-existence* - by enhancing coordination between sectors and administrations in each country on the affairs of resource management such as oil and gas, cables and pipelines, shipping lanes, wind energy installation, fishing, sailing and protected areas and further emphasize equal benefit for each sector.
- *Encourage investment* - by ensuring clearer rules, transparency and predictability in your economic management plan to protect, develop and maintain the management area. This principle in practice, has the potential for accelerating the economic and socio-economic conditions in the management area.
- *Allow space and time* - to ascertain the 10, 20, 50 or 100 year demographics of the environment and design a series of growth indicators to resolve the identified threats. These threats can be overpopulation adjacent to the marine environment, as well as lack of resources and capacity to execute long-term programs.

8.2. Significance and implications of the proposed framework for the GoG region

As enshrined in the framework of the 2050 African Union Commission Integrated Maritime Strategy Aim and Agenda, the *Part xiii* underscores the need for each Member State to aim at preventing the perennial maritime-based conflicts, so that marine spaces and resources can be used efficiently and sustainably and take decisions based on sound data and in-depth knowledge of the sea and inland waters to enhance investor confidence and encourage Africa's blue economic growth. To accomplish such goals, the 2050 AU Agenda further stressed the importance of determining all the maritime spaces settled for each activity in the continent and provide a characterization of current and future uses of Africa's Maritime Domain (AMD). This process, however, entails the provision of a set of protocols for Member States as reflected in the 2019 regional protocol on integrated coastal zone management, which promotes a three-year MSP pilot program for Ghana, Côte d'Ivoire and Benin, in addition to the Land-Based Sources and Activities (LBSA) protocol, which has the goal of promoting Co-operation in the Protection and Development of the Marine and Coastal Environment in the Western, Central and Southern African Regions. The LBSA protocol additionally, serves the objective of protecting and sustaining the marine and coastal environment and building capacity for marine resources and environmental management.

Comments: While the ICZM and LBSA protocols of the Abidjan Convention have appropriately set the precedent for regional integration, moving forward, additional funds to sustain the management plan may be challenging, as means of obtaining additional funds was not spelt out in the regional protocols respectively. Hence, it is recommended that such management strategies be factored into the draft plan in the near future. To accomplish this strategy, a public-private partnership approach is required, as funds from governments and other agencies may not be sufficient to sustain the plan (Section 3.5.1). To enhance confidence and predictability in this approach, it is advisable to derive a set of methods to assess the feasibility and the amount needed to sustain the plan (Ibid). Believing that achieving this strategy in practice in addition to the successful implementation of the plan, can set the platform for the citizenry to gain the needed confidence in the regional governance structures, thereby fulfilling the overarching vision of the 2050 African Union Maritime Strategy Aim and Agenda which seeks "to foster wealth creation from Africa's oceans and seas by developing a sustainable thriving blue economy in a secure and environmentally sustainable manner".

8.3. Final remarks

This study in perspective ultimately sought to deliver an overarching transboundary geospatial framework to assist in preventing the upsurge of maritime-based conflicts in the GoG region. To consolidate such an aim, the Executive Council of the African Union in 2010 correspondingly established the African Union Border Programme (AUBP) to enhance peaceful co-existence and facilitate cooperation in the African continent based on Resolution AHG/Res.16 (1) and Resolution CM/Res.1069 (XLIV), in addition to Article 4 (b) of the AU Constitution. According to the commissioner of AUBP in 2017, "this programme has made significant progress since 2007 in the affairs of boundary delimitation, regional cooperation and capacity building". Despite this effort, maritime-based conflicts ascend and hinder the blue economic growth of Africa as also demonstrated in sections 1.2.1 – 1.2.3. The subsequent effects of such conflicts essentially call for the need to synergize the reactive measures of the AU with the proactive recommendations in this research for an effective output. This is to say, that as the African Union continues to pursue robust integrated management measures for its

Regional Economic Communities, it is recommended for the MSP Pilot Program in the GoG region to equally incorporate such novel output to help attain the strong integrated regime the region is desiring.

In addition to the preceding remarks, this study further recognizes that lack of national commitment and adherence to the Continental Agenda and UN Convention in recent years has influenced a number of sea-use conflicts in the GoG region. Notably, the discourse in section 3.1 emphasizes that conscious efforts have been made by UNESCO-IOC to promote international cooperation through a number of practical mechanisms. To date, these mechanisms appear to have made significant trade-offs due to non-adherence. This suggests that the eight proposed frameworks developed in chapter seven, will additionally be a strong tool to attain the needed result when embraced. At this juncture, the outlook of this set of framework remains optimistic because its success also hinges on clearer MSP goals and objectives, as stressed in section 1.10. This implies that the regional protocol on integrated coastal zone management, enacted to ensure successful development and implementation of a trilateral MSP, currently requires reform to spell out specific MSP goals and objectives. This move is believed to provide predictability in the planning process and overcome the uncertainty that may hinder implementation and operationalization effort. If all these processes are achieved, the GoG region is indeed hopeful of maintaining a resilient ecosystem and enhancing the blue economic growth of Africa. To this end, the following sections present the substantial research input or contribution of knowledge to the body of literature and practice. This aspect, however, delves into the theoretical, practical and methodological novelties of the study and ultimately provides the study limitations along with recommendations for further study.

8.4. Additional knowledge to literature and practice

Theoretical novelties and implications: As part of the literature review, the second chapter in perspective, recognized the essence of utilizing various literature to ascertain the role of maritime boundaries and joint agreements in transboundary planning. The discussion in the sixth chapter as well, utilized the empirical evidence to determine the proximate causes of maritime-based conflicts, their effects and prospects for the GoG marine region.

Theoretical limitations experienced: Stressing that the argument in chapters 2 and 6, employed a set of multidisciplinary concepts to address a number of theoretical lapses and gaps. Although such an approach imposed limitations on the scope of knowledge discharged in this research, the approach further assisted in developing a series of conceptual novelties for regimes to adopt in order to systematically disperse such knowledge into a feasible outcome.

Practical novelties and implications: To assist in deriving the eight essential jurisdictional frameworks for the GoG region, the analysis in chapter three assisted in addressing the emerging challenges confronting TMSP practice, while the analysis in chapter four additionally uncovered a series of strengths and weaknesses of transboundary marine spatial planning practice. Such debate in chapters 3 and 4 in effect, contributed to deriving significant underemphasized dimensions of transboundary marine spatial planning in the fifth chapter – making an impact by substantially adding value to the existing TMSP knowledge and practice. Such novelty or practical knowledge, undoubtedly has the capacity of influencing the TMSP development and planning process in the GoG marine region.

Practical limitations experienced: It is instructive to note that the current planning conditions in the GoG region, possess some significant limitations which are likely to instigate further implementation challenges. Such practical limitations include ineffective coordination

and limited transparency between the planning group and civil society, as well as conflict of interest among stakeholders. Being an expert delegate for the preliminary meetings and fora, it was observed that communication and dialogue was practically ineffective with civil society groups and the ocean users. Emphasizing that engaging both user and societal perspectives, provides additional knowledge and aspirations which may contribute to averting potential contentions.

Methodological novelties and implications: In the process of developing research methods relevant for analysing the two selected regimes, the fourth chapter uncovered a series of themes for analyzing the selected regimes, and further identified evaluation criteria for ascertaining the performance of the analysed regimes, while the sixth chapter also identified a primary analytical tool christened as the CEP unit of analysis.

Methodological limitations experienced: Beside the above-mentioned methodological novelties, the primary research found that some survey questions were not salient to a section of respondents, primarily due to unsuitable constructs or lack of proper understanding by a certain group of professionals drawn from various disciplines. In spite of this challenge, a large number of respondents provided appropriate responses for validation and analysis. Although the 11.8 per cent non-response rate represents a significant number who could have altered or strengthened the conclusions of this research, nonetheless the 88.2 per cent response rate helped in achieving the needed results as expected by the objective of the research.

Supplementary challenges

Data collection and language barrier. ›
Assessment of regional management approaches and practices and consequent implications for stakeholders, experts and policy actors. ›
Research to be perceived as propaganda for environmental politics. ›

Contingencies

Assistance from an English interpreter.
Prior enlightenment to key stakeholders about the benefits of the research to enhance knowledge and understanding.
Informants' prior knowledge about data usage to enhance confidence and credibility.

8.5. Further research

This research, although insightful and important, has also paved the way for further investigations to be carried out. This means that more detailed inquiries are expected for effective outcomes. This submission is based on the fact that in section 8.4., a discussion was conducted to underscore the theoretical and practical limitations of the study. These discussions further revealed four essential areas in need of further research. Regarding the areas identified, journal articles are recommended based on the limited scope of information to be supplied. These articles are, however, expected to improve on TMSP research and identify a number of potential elements for sustaining the TMSP concept. Asserting that, the 4 topical areas identified for further research include:

- Effective Methods of Minimizing Policy-Spans in TMSP Process;
- The Process of Averting Emerging Disparities in TMSP Policies and Practices;
- The Essential Scheme for Promoting Effective Coordination in the TMSP process; and
- The Strategic Means of Preventing Stakeholder Conflict of Interests in the MSP Process.

In this study, a series of potential areas were identified for further research, but were beyond the requirements of research ethics. This suggests that, the identified areas listed for further research must help explore a host of TMSP articles and case studies in different contexts. This approach will help uncover a series of issues and elements that need to be improved and further address the lapses and gaps in TMSP policies and practices. As envisaged by the research aim, this study has indispensably delivered its input, to the development of the proposed overarching geospatial framework for the Mami Wata MSP Pilot Program in chapters six and seven, in light of the problem statements in chapter one, and the geospatial planning and implementation challenges identified in chapter three, proving it a functional and credible piece of monograph.

APPENDIX ONE

An Overarching Transboundary Geospatial Framework

SURVEY

World Maritime University

This study aims at developing an overarching transboundary geospatial framework for the Gulf of Guinea (GoG) marine region.

About the Study:

One major challenge facing the maritime industry is sea use conflicts; which are mostly attributable to ocean fragmentation and lack of transboundary cooperation.

Purpose of this research: On the basis of UNCLOS Arts. 197, 242, 270-8, the purpose of this doctoral study is to conceptualize and develop an overarching transboundary geospatial framework capable of preventing the upsurge of maritime-based conflicts in the Gulf of Guinea (GoG) marine region. The proposed framework, and shall support the Integrated Coastal Zone Management Protocol of the Abidjan Convention which is situated within the Guinea Current Large Marine Ecosystem (GCLME). In this survey, the list of questions primarily aims at investigating the root causes of sea use conflicts in the GoG region, their effects and future prospects. As a result, the questionnaire was designed to uncover the conflict-prone areas in the region in order to inform expert's decisions. The adverse effects on the other hand, shall reveal the threats in order to set environmental goals to prevent those threats. The analysis shall assist in deriving a set of technical mechanisms or key prospects for synergizing the proposed framework. The derived framework shall be presented as a deliverable document to the Regional Coordinating Unit of the Abidjan Convention, and as an information paper to its National Focal Points. The abridge version shall be published in an academic journal.

Research informed consent form

Title of Research: *A Critical Assessment for the Development of an Overarching Transboundary Geospatial Framework: Selected Regimes in Perspective*

Doctoral Candidate: *Bryan Buxton-Barnor*

Dear Respondent's,

We will highly appreciate your time to read and ***sign the consent statement below***. Owing to the principles of research ethics, a high degree of confidentiality and anonymity is assured to all participants with regards to data detention and usage. In this vein, a copy of the research data will be stored in the researcher's personal *hard drive* and *I-cloud* account for only 3-5 years and be disposed of through shredding and deletion after completing the project. Participation is strictly voluntary and you may refuse to participate at any time. However your participation is much appreciated. Indeed, we are grateful for your kind cooperation and contribution to this research.

"I, the undersigned, consent to my personal data as outlined in the accompanying information sheet, being used for this study and other research. I understand that all personal data relating to volunteers is held and processed in the strictest confidence."

Name Organization: Signature:

Thank you very much for your kind support and participation in this survey. If you require any additional information, do not hesitate to contact the doctoral candidate Bryan Buxton-Barnor via email: *p1504@wmu.se*. You may also contact the project supervisor, Professor Larry Hildebrand, via email *lh@wmu.se*. Merci beaucoup.

Survey questions attached.

✓ *Please tick the boxes, circles and short-dash lines which represents your choice of answers.*

The Policy Actor and Lead Planner Category
National Focal Points and the Regional Coordinating Unit of the Abidjan Convention

1. Which of the following major maritime domain operational practices in this region, usually conflict with each other? [Please select two possible answers]

- ☐ Fishing and its related activities
- ☐ Navigation and sailing
- ☐ Military activities
- ☐ Onshore or ports activities
- ☐ Oil and gas activities

Other (Please State):

2. What are the effects on the above chosen maritime domain operational practices as result of conflict? [Please select two possible answers]

- _____ Effect on ecosystems
- _____ Effect on governance
- _____ Effect on ocean users
- _____ Effect on economic and social systems
- _____ Effect on technology transfer

Other (Please State):

3. In the process of preventing sea use mismatches, which technical or practical mechanism can be beneficial to this region? {Future prospects} [Please select two possible answers]

Other (Please State):

(Stakeholder Category One)

General maritime operations under the supervision of government regulatory agencies.

The triggering factors of sea conflicts discovered by Miles, (1999), Cicin-Sain, (2003) and Edward, (2009) indicates that, conflicts in the maritime domain usually emanates based on the disparities in offshore operations. Example; fishing, military activities, onshore and ports activities, aquaculture, energy and mineral resource activities. In this survey, the following choice of answers to the list of questions were derived as the major offshore activities in the

GoG. Please tick the boxes, circles and short-dash lines which represent your choice of answers, or state an alternative answer or an idea in the column indicated as:
“Other (Please State):

Fisheries

4. Which of the following fishing activities conflict with each other? [Please select two possible answers]

- ☐ Recreational and spearfishing
- ☐ Commercial benthic fishing
- ☐ Yacht or artisanal fishing
- ☐ Motorized boat fishing
- ☐ Angling or trapping fishing

Other (Please State):

5. Which of the following core elements represent the effect of the above chosen fishing activities? [Please select two possible answers]

- _____ Effect on biodiversity
- _____ Effect on ecology
- _____ Effect on coral reef
- _____ Effect on ecosystem
- _____ Collisions and capsizing effect

Other (Please State):

6. Which of the following offshore aquaculture development operational practices conflict with each other? [Please select two possible answers]

- ☐ Fish/livestock culture
- ☐ Oyster culture
- ☐ Shrimp culture
- ☐ Ponds culture
- ☐ Mari-culture

Other (Please State):

7. What are the environmental effects on the above chosen aquaculture development practices? [Please select two possible answers]

- _____ Effect on biodiversity
- _____ Effect on ecology

- _____ Effect on coral reef
 _____ Effect on ambient water quality
 _____ Effect on the seabed

Other (Please State):

8. In the process of preventing sea use mismatches, which technical or practical mechanism can be beneficial to this region? {Future prospects} [Please select two possible answers]

Other (Please State):

Ports and Harbours

9. Which of the following major onshore and ports control activities conflict with each other? [Please select two possible answers]

- [] Navigation
 [] Fishing and aquaculture
 [] Oil and gas exploitation
 [] Vessel anchoring zones
 [] Sailing and surfing

Other (Please State):

10. Which of the following represent the effect on the above chosen onshore and ports control activities? [Please select two possible answers]

- _____ Cargo emissions and discharge effect
 _____ Cargo noise effect
 _____ Oil spills effect
 _____ Mooring and anchoring disruption
 _____ Vessel and mammal collisional effect

Other (Please State):

11. In the process of preventing sea use mismatches, which technical or practical mechanism can be beneficial to this region? {Future prospects} [Please select two possible answers]

Other (Please State):

Energy and Petroleum

12. Which of the following mineral resource activities conflict with each other? [Please select two possible answers]

- ☐ Oil and gas exploitation
- ☐ Aggregate dredging
- ☐ Deep sea mining
- ☐ Oil pipelines
- ☐ Gas pipelines

Other (Please State):

13. What are the operational effects on the above mentioned mineral resource activities? [Please select two possible answers]

- _____ Spilling effect
- _____ Economic effect
- _____ Seabed effect
- _____ Pollution effect
- _____ Effect on fishing

Other (Please State):

14. Which of the following energy supply activities conflict with each other? [Please select two possible answers]

- ☐ Oil pipelines
- ☐ Gas pipelines
- ☐ Wind turbines
- ☐ Wind energy cables
- ☐ Wind energy cable landing points

Other (Please State):

15. Which of the following elements represent the operational effect on the above-mentioned energy supply activities? [Please select two possible answers]

- _____ Impact of the increase turbine noise on marine life
- _____ Impact of the offshore wind turbines on birds and bats
- _____ Disturbance to the seabed
- _____ Oil/gas pipeline effects on seabed

_____ Disturbance and pollution to the marine environment

Other (Please State):

16. In the process of preventing sea use mismatches, which technical or practical mechanism can be beneficial to this region? {Future prospects} [Please select two possible answers]

Other (Please State):

(Stakeholder Category Two)

Specific technical operations under the supervision of government regulatory agencies.

Shippers

17. Which of the following deficiencies in navigation conflict with each other? [Please select two possible answers]

- ☐ [] Unauthorized shipping routes
- ☐ [] Unauthorized anchor zones
- ☐ [] Illegal transit shipping
- ☐ [] Illegal dredged material dumping sites
- ☐ [] Smuggling

Other (Please State):

18. Which of the following represents the operational effect on the above-mentioned navigational practices? [Please select two possible answers]

- _____ Effects on ambient water quality
- _____ Effects on biodiversity
- _____ Effects on national economy
- _____ Effects on habitats
- _____ Effects on fishing

Other (Please State):

19. In the process of preventing sea use mismatches, which technical or practical mechanism can be beneficial to this region? {Future prospects} [Please select two possible answers]

Other (Please State):

The Navy

20. Which of the following military activities conflict with each other? [Please select two possible answers]

- ☐ Provision of assistance to landing forces
- ☐ Provision of shipboard security
- ☐ Enforcement of discipline
- ☐ Protection of human lives at sea
- ☐ Conducting ship-to-ship fighting

Other (Please State the sea use activities that do conflict with the navy):

21. Which of the following represents the operational effect on the above-mentioned activities? [Please select two possible answers]

- _____ Effects on fishing
- _____ Effects on shipping
- _____ Effects on protected areas
- _____ Effects on aquaculture developments
- _____ Effects on exploitation and dredging areas

Other (Please State):

22. In the process of preventing sea use mismatches, which technical or practical mechanism can be beneficial to this region? {Future prospects} [Please select two possible answers]

Other (Please State):

Other Category
Ocean Users

23. Which of the following marine domain operational practices in this region usually conflict with each other? [Please select two possible answers]

- ☐ Fishing and its related activities
- ☐ Navigation and sailing
- ☐ Military activities
- ☐ Onshore or ports activities
- ☐ Oil and gas activities

Other (Please State):

24. What are the effects on the above chosen marine domain operational practices as result of conflict? [Please select two possible answers]

- _____ Effect on ecosystems
- _____ Effect on governance
- _____ Effect on ocean users
- _____ Effect on economic and social systems
- _____ Effect on technology transfer

Other (Please State):

25. In the process of preventing sea use mismatches, which technical or practical mechanism can be beneficial to this region? {Future prospects} [Please select two possible answers]

Other (Please State):

Expert and Stakeholders Category

The expert and stakeholders category shall assist in answering the interview questions.

Justifications: This technique strategically provides efficient and cost-effective approach to information gathering and encourages greater data availability than at present. It further reduces the burden and duplication of effort between sectors. The following three core points, represents the practical merits for the adopted technique: 1), assist in quality geospatial analysis; 2), evaluates spatial mapping scales for human activities, conflict capabilities, as well as biological and ecological sensitive area determinations; and 3), ensures operational geographic equity, and averts disparities. The points listed above, are in tandem with the “Strategic Environmental Assessment (SEA) Principle”.

INTERVIEW QUESTIONS

Experts and stakeholders in the Gulf of Guinea marine region

Causations.....

1. Opinion sharing - After siting maritime activities such as fishing, oil and gas exploitation, buffer zones and navigation, which activities usually conflicts with each other?

Effects....

2. Opinion sharing - What are the effects on the above conflicting maritime activities?

Prospects.....

3. Opinion sharing - Which practical or technical mechanism can be derived to assist in preventing the upsurge of maritime-based conflicts in the Gulf of Guinea marine region?

Causations.....

4. Opinion sharing - After siting maritime activities such as fishing, oil and gas exploitation, buffer zones and navigation, which activities usually conflicts with each other?

Effects....

5. Opinion sharing - What are the effects on the above conflicting maritime activities?

Prospects.....

6. Opinion sharing - Which practical or technical mechanism can be derived to assist in preventing the upsurge of maritime-based conflicts in the Gulf of Guinea marine region?

Development of an overarching geospatial framework for the Gulf of Guinea Region – Interview

Introduction

15/10/2016

Dear Participant,

I am a PhD candidate at the World Maritime University. For my PhD, I am examining the conflicting marine uses in the Gulf of Guinea and develop an overarching transboundary geospatial framework for the region.

One of the objectives of the Abidjan Convention is to foster Co-operation in the Protection and Development of the Marine and Coastal Environment of the Western, Central and Southern African Region. For this reason, I am inviting you to participate in this survey by allowing me to interview you on the said topic. The interview will take fifteen minutes of your time and preferably be conducted by means of writing. Participation is strictly voluntary and you may refuse to participate at any time. However your participation is much appreciated.

There is no compensation for participating, but we hope the outcome of this research shall maximize regional cooperation and promote peaceful co-existence, increase coordination and protect and develop the environment to encourage investment. The framework shall be presented as a deliverable document to the Regional Coordinating Unit of the Abidjan Convention, and as an information paper to its National Focal Points. The abridge version shall be published in an academic journal.

If you are not satisfied with the manner in which this study is being conducted, you may forward any complain anonymously to my supervisor, Professor Larry Hildebrand. We shall, however, keep non-public information confidential and shred or delete after three years.

Thank you very much for your kind support and participation in this survey. If you require any additional information, do not hesitate to contact the doctoral candidate Bryan Buxton-Barnor via email: p1504@wmu.se. You may also contact the project supervisor, Professor Larry Hildebrand, via email lh@wmu.se. Merci beaucoup.

Sincerely,

Bryan Buxton-Barnor

APPENDIX TWO

APPENDIX 2 - Bibliographic references

A

- ACETIC. (2006). Tropes Version 7.0: reference manual. Retrieved 10 August, 2016, from <http://www.semantic-knowledge.com/doc/V70/text-analysis/index.html>
- Acs, Z. J., Anselin, L., and Varga, A. (2002). Patents and innovation counts as measures of regional production of new knowledge. *Research policy*, 31(7), 1069-1085.
- Agardy, T., Tunesi, L. Villa, F. (2002). Zoning Marine Protected Areas Through Spatial Multi-Criteria Analysis: The Case of Asinara Island National Reserve of Italy. *Conservation Biology* 16(2) pp. 1-12.
- Agardy, T. (2005). Global marine conservation policy versus site-level implementation: the mismatch of scale and its implications: Politics and socio-economics of ecosystem-based management of marine resources. *Marine ecology. Progress series*, 300, 242-248.
- Agardy, T. (2010). *Ocean zoning: making marine management more effective*. Earthscan.
- Agardy, T., Di Sciara, G.N., and Christie, P. (2011). Mind the gap: Addressing the shortcomings of marine protected areas through large scale marine spatial planning. *Marine Policy*, 35(2), 226-232.
- Agenda 21, Chapter 17, 1992. United Nations Conference on Environment and Development
- Aggeliki, K. (2013). *Topography of the Ocean Floor*. Retrieved from <http://www.brighthubengineering.com>.
- Aikenhead, G. (2001). Integrating Western and Aboriginal sciences: Cross-cultural science teaching. *Research in Science Education*, 31(3), 337-355.
- Aktinson, A. and Riani, M. (2012). *Robust diagnostic regression analysis*. Springer Science and Business Media.
- Alley, J. Topelko, K. (2007). Ocean Governance Arrangements in British Columbia. Retrieved from Maritime Awards website http://www.maritimeawards.ca/OGCWC/Docs/Oceans_Governance_Arrangements.pdf.
- Alley, J. (2013). Review and Analysis of Federal Reports and Legislative Changes in Pacific Canada Relevant to the Marine Planning Partnership Initiative. Prepared for the Marine Planning Partnership. Jamie Alley and Associates. Victoria, B.C., Canada.
- Alley, J. (2016) Rethinking Public Engagement and Governance of Marine Protected Areas in Pacific Canada. The Zone, Fall 2016 Issue. Retrieved from https://gallery.mailchimp.com/2a4b8bcd7085564c6496079df/files/THEZONE_FALL_2016.pdf
- Alreck, P.L., & Settle, R.B. (2004). *The survey research handbook* (3rd Ed.). New York:
- Anderson, Ewan W. (2003). *International Boundaries: A Geopolitical Atlas*, p. 297;
- Anderson, M. R., & Boyle, A. E. (1996). Human rights approaches to environmental protection.
- Anderson, V. (2004). *Research Methods In Human Resource Management*. London: Chartered Institute of Personnel Development.
- Andrescavage, N., Fox, C., McCann, J., Smythe, T. (2016). Spatial Planning for Busy Waterways: A Case Study of Innovative Waterways Management in the San Francisco Bay Region. Case Studies for Marine Spatial Planning Series. McCann, J (ed). Coastal Resources Centre and Rhode Island Sea Grant Program. Retrieved September 10th, 2016 from http://www.crc.uri.edu/download/SFBayCaseStudy_FIN.pdf.
- Annan, N. (2014). Violent Conflicts and Civil Strife in West Africa: Causes, Challenges and Prospects. *Stability: International Journal of Security and Development*, 3(1), Art-3.
- Annesley, T. M. (2010). The discussion section: your closing argument. *Clinical chemistry*, 56(11), 1671-1674.

- Armstrong, P. (2009). Conflict Resolution and British Columbia's Great Bear Rainforest: How multi-interest governance led to resolution of a global conflict over logging in Canada's coastal temperate rainforest.
- Arctur, D., and Zeller M., (2004). Designing Geodatabases: case studies in GIS data modelling. ESRI Press: Redlands, CA, USA. 411 p.
- Ardron, J.A., Possingham, H.P., and Klein, C.J. (eds), (2008). *Marxan Good Practices Handbook*. (External review version). May, 2008. Pacific Marine Analysis and Research Association: Vancouver, BC, Canada. 155 p. www.pacmara.org.
- Attfield, R. (2011). *The ethics of environmental concern*. University of Georgia Press.
- B**
- Backer, H. (2011). Transboundary maritime spatial planning: a Baltic Sea perspective. *Journal of Coast Conservation*, vol. 15, no. 2, pp. 279-89.
- Backer, Hermanni and Frias, Manuel (2012) (Eds.) *Planning the Bothnian Sea: Key Findings of the Plan Bothnian Project*, Finepress Tarku, Finland.
- Bandura, A. (2002). Selective Moral Disengagement in the Exercise of Moral Agency. *Journal of Moral Education*, 31(2), 101-119.
- Bastida, A. E., Ifesi-Okoye, A., Mahmud, S., & Ross, J. (2006). Cross-border unitization and joint development agreements: an international law perspective. *Hous. J. Int'l L.*, 29, 355.
- Bavinck, M. (2005). Understanding fisheries conflicts in the South—a legal pluralist perspective. *Society and Natural Resources*, 18(9), 805-820.
- Bazeley, P., & Jackson, K. (Eds.). (2013). *Qualitative data analysis with NVivo*. Sage Publications Limited.
- Bazeley, P., & Richards, L. (2000). *The NVivo qualitative project book*. Sage.
- B.C. Ministry of Environment. (2009). Marine Protected Areas (MPAs). British Columbia Ministry of Environment webpage. Accessed November 4th, 2015 from <http://www.env.gov.bc.ca/omfd/ocean-resources/mpa.html>
- Behrens, L., Rosen, L. J., & Beedles, B. (2012). *A sequence for academic writing*. Pearson.
- Bell, J. (1999). *Doing your research project: A guide for first time researchers in education and social science*. (3rd Ed). Buckingham: Open University Press
- Bening, R. B. (2015). The Ghana-La Côte D'Ivoire maritime boundary dispute. *Ghana Journal of Geography*, 6(1), 81-101.
- Berkes, F., Colding, J. and Folke, C. (2000). Rediscovery of Traditional Ecological Knowledge as Adaptive Management. *Ecological Applications*, 10: 1251–1262. doi:10.1890/1051-0761(2000)010[1251:ROTEKA]2.0.CO;2.
- Bernard, H. R., & Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Biang, J.T. (2010). The Joint Development Zone between Nigeria and São Tomé and Príncipe: A Case of Provisional Arrangement in the Gulf of Guinea International Law, State Practice and Prospects for Regional Integration.
- Bille, R. (2008). Integrated Coastal Zone Management: four entrenched illusions. Institute for Sustainable Development and International Relations (IDDRI). *Surv. Perspect. Integr. Environ. Soc.*, 1, 1–12, 2008 www.surv-perspect-integr-envir-soc.net/1/1/2008/
- Birnie, P. W., & Boyle, A. E. (1994). *International law and the environment*.
- Bissinger, J. (2010). 'The maritime boundary dispute between Bangladesh and Myanmar: Motivations, potential solutions, and implications'. *Asia policy*, 10(1), 103-142.
- Blaikie, N. (1993), *Approaches to Social Enquiry*, 1st ed, Polity Press, Cambridge.

- Boateng, I. (2006). Institutional Frameworks in the Administration of Coastal and Marine Space in Africa. *Administering Marine Spaces: International Issues*, 102.
- Boesch, D. F. (1999). The role of science in ocean governance. *Ecological Economics*, 31(2), 189-198.
- Bones, J. (2015) MEAM: Planning Canada's Pacific Coast: What made it work? MEAM (8:6) retrieved august 4th, 2016 from <https://meam.openchannels.org/meam/issue/september-2015-86>
- Borgese, E. M. (1996). Ocean governance and the United Nations.
- Borg, W. R., Gall, J. P., & Gall, M. D. (1993). *Applying educational research* (3rd ed.). New York: Longman.
- Borodzicz, E. P. (2005). *Risk, Crisis & Security Management*. Chichester: John Wiley & Sons Ltd.
- Bouamrane M. (2006). Biodiversity and stakeholders: concertation itineraries. Biosphere reserves, technical notes 1. Paris, UNESCO.
- Boushey, G., & Moser, J. (2009). *The café book: Engaging all students in daily literacy assessment & instruction*. Stenhouse Publishers.
- Bower, J. L. (1970). Managing the resource allocation process: A study of corporate planning and investment.
- Boyle, A. E. (1999). Some reflections on the relationship of treaties and soft law. *International and comparative law quarterly*, 48(04), 901-913.
- Boyle, A. E., & Anderson, M. R. (1996). *Human rights approaches to environmental protection*. Clarendon Press
- Boyle, A. E., & Freestone, D. (Eds.). (1999). *International law and sustainable development: past achievements and future challenges* (pp. 15-18). Oxford: Oxford University Press.
- Bradley, S. (2012). The value of theoretical and practical knowledge. *Retrieved from*.
- Brannen, J. (1992). *Combining qualitative and quantitative approaches: An overview*. Aldershot: Avebury.
- Brans, J. P., & Vincke, P. (1985). Note—A Preference Ranking Organisation Method: (The PROMETHEE Method for Multiple Criteria Decision-Making). *Management science*, 31(6), 647-656.
- Breckenridge, J. & Jones, D. (2009). 'Demystifying Theoretical Sampling in Grounded Theory research' N.A.
- Brennan, R. Smith, G. (2012) Losing our way with Mapping: Thinking critically about marine spatial planning in Scotland. *Ocean and Coastal Management* (69) p. 210-216. doi:10.1016/j.ocecoaman.2012.08.016.
- Brewer, Cynthia A., (2005). *Designing Better Maps: a guide for GIS users*. ESRI Press: Redlands, CA, USA. 203 p.
- Brydon-Miller, M., Greenwood, D., & Maguire, P. (2003). Why action research?
- Bryman, A. (2003a). *Quantity and quality in social research*. Routledge.
- Bryman, A. (2004b). *Social research methods (2nd edition)*. Oxford: Oxford University Press.
- Bryman, A. (2006c). *Integrated qualitative and quantitative research: How is it done?* London: Sage.
- Bryman, A. (2012c). *Social research methods*. Oxford university press. California: Sage Publications.

Bunce, L., P. Townsley, R. Pomeroy, R. Pollnac, (2000). Socioeconomic manual for coral reef management. Australia Institute for Marine Science: Townsville, Australia (downloadable at: www.aims.gov.au/pages/reflib/smcrm/mcrm-000.html).

C

Card, D.E. (1999). The causal effect of education on earnings. *Handbook of Labor Economics* 3: 1761–1800.

Card, D.E. (2001.) Estimating the return to schooling: Progress on some persistent econometric problems. *Econometrica* 69: 1127–1160.

Carneiro, G. (2013). Evaluation of marine spatial planning. *Marine Policy*, 37, 214-229.

Carmona, M., & Sieh, L. (2008). Performance measurement in planning—towards a holistic view. *Environment and Planning C: Government and Policy*, 26(2), 428-454.

Charmaz, K. (2000). Grounded theory: Objectivist and constructionist methods. In: Denzin NK and Lincoln NK (eds) *Handbook of Qualitative Research*, 2nd edn. New York: Sage Publications, 509–536.

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*. London: Sage Publications.

Charney, Jonathan *et al.* (2005). *International Maritime Boundaries*, pp. 2293–2295.

Carr-Harris, C., Gottesfeld, A., Moore, J. (2015). Juvenile Salmon Usage of the Skeena River Estuary. *PloS* 10.3: e0118988; JW Moore, C Carr- Harris, AS Gottesfeld, D Macintyre, D Radies, M Cleveland, C Barnes, W Joseph, G Williams, J Gordon, B Shepert, Selling First Nations down the river (2015) *Science* 7 August 2015: Vol. 349, No 6248, at 596.

Ching, C. P. (2014). Linking theory to practice: A case-based approach in teacher education. *Procedia-Social and Behavioural Sciences*, 123, 280-288.

Chircop, A., and B. A. Marchand. (2001). *Oceans Act*: Uncharted seas for offshore development in Atlantic Canada? *Dalhousie Law Journal* 24:23–50.

Chircop, A., and L. Hildebrand. (2006). A perspective on integrated coastal and ocean management in Canada. In *Towards principled oceans governance: Australian and Canadian approaches and challenges*, eds. D. R. Rothwell and D. L. Vander Zwaag, 19–71. London: Routledge Press.

Chua, T. (1998). Lessons learned from practicing integrated coastal management in Southeast Asia. *Ambio* 27(8): 599-610.

Chua, T. E. (2013). Coastal and Ocean Governance in the Seas of East Asia: PEMSEA's Experience. *Coastal Management*, 41(2), 99-119.

Cicin-Sain, B. (1993). Sustainable development and integrated coastal management. *Ocean & Coastal Management*, 21(1-3), 11-43.

Cicin-Sain, B. (2003, September). Multiple use conflicts and their resolution: toward a comparative research agenda. In *Ocean Management in Global Change: Proceedings of the Conference on Ocean Management in Global Change, Genoa, 22-26 June 1992* (p. 285). CRC Press.

Cicin-Sain, B. (ed.), 1992. *Ocean governance: A New Vision*. Newark: University of Delaware, Centre for the Study of Marine Policy.

Clifford, N.J., & Valentine, G. (2003). *Key methods in geography*. London: Sage.

Cochran, P. L., & Wood, R. A. (1984). Corporate social responsibility and financial performance. *Academy of management Journal*, 27(1), 42-56.

Collis, J., & Hussey, R. (2009). *Business Research* (3rd ed.). New York: Palgrave Macmillan. Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs. (2008). *Oceans Act*. United States of America

Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice, 13th Meeting, 18-22 February (2008), Marine and Coastal Biological Diversity, Annex II, scientific criteria for identifying ecologically or

biologically significant marine areas in need of protection, in open ocean waters and deep-sea habitats.

Corti, L. and Thompson, P. (1998). 'Are you sitting on your qualitative data? Qualidata's mission', *International Journal of Social Research Methodology*, Vol. 1 (1): 85-89.

Corti, L., Foster, J., Thompson, P. (1995). 'Archiving qualitative research data', *Social Research Update*, Issue 10. <http://www.soc.surrey.ac.uk/sru/SRU10.html>

Coastal Resource Center, G. S. o. O. (2013) 'Shama District Integrated Coastal Management Toolkit. ', 62.

Courtney, F., and Wiggin, J. (2002). Ocean zoning for the Gulf of Maine: a background paper.

CRC. (2016). Marine Spatial Planning: Advice from the Field. [PDF file] Coastal Resources Centre. University of Rhode Island. Retrieved September 10th, 2016 from www.crc.uri.edu/initiatives_page/msp/

Creswell, J. W. (2002). *Educational research*. Upper Saddle River, NJ: Pearson Education.

Crowder, L., and Norse, E. (2008). Essential ecological insights for marine ecosystem-based management and marine spatial planning. *Marine Policy*, 32(5), 772-778.

Crowder, L.B., Osherenko, G., Young, O.R., Airamé, S., Norse, E.A., Baron, N... & Wilson, J.A. (2006). Resolving mismatches in US ocean governance. *Science-New York then Washington-*, 313(5787), 617.

D

Dalton, T., Thompson, R., & Jin, D. (2010). Mapping human dimensions in marine spatial planning and management: An example from Narragansett Bay, Rhode Island. *Marine Policy*, 34(2), 309–319. <https://doi.org/10.1016/j.marpol.2009.08.001>.

Dandy, N. Graves, A. Hubacek, K. Morris, J. Posthumus, H. Prell, C. Quinn, C. Reed, M. Holling, C.S. Meffe, G. (2002) Command and Control and the Pathology of Natural Resource Management. *Conservation Biology* 10(2) pp. 328-337.

Datilio, F. M. (2006). Does the Case Study Have a Future in the Psychiatric Literature? *International Journal of Psychiatry in Clinical Practice*, 10, 195-203.

Day, J. C. (2002). Zoning—lessons from the Great Barrier Reef marine park. *Ocean & Coastal Management*, 45(2), 139-156.

Day, J., (2008). The need and practice of monitoring, evaluating, and adapting marine planning and management. *Marine Policy*. 32:5. September. (Downloadable at: ioc3.unesco.org/marinesp).

Day, V., Paxinos, R., Emmett, J., Wright, A., & Goecker, M. (2008). The Marine Planning Framework for the South Australia: A new ecosystem-based zoning policy for marine management. *Marine Policy*. 32(4), 535-543.

Dearden, R., Meuleau, N., Ramakrishnan, S., Smith, D. E., & Washington, R. (2003). Incremental contingency planning.

Demarchi, D. (2011). The British Columbia Ecoregion Classification. Ecosystem Information Section, Third Ed. 2011. B.C. Ministry of Environment. Retrieved September 28th, 2016 from <http://www.env.gov.bc.ca/ecology/ecoregions/>

De Oliveira Matias, J. C., & Coelho, D. A. (2002). The integration of the standards systems of quality management, environmental management and occupational health and safety management. *International Journal of Production Research*, 40(15), 3857-3866.

Department for Business Enterprise and Regulatory Reform, (2008). Atlas of UK Marine Renewable Energy Resources. 19 p.

- Department of Oceans and Fisheries. (2009). Pacific North Coast Integrated Management Area: Issues Challenges & Opportunities. A Discussion Paper. J.G Bones Consulting. Retrieved April 12th, 2016 from <http://www.dfo-mpo.gc.ca/Library/347028.pdf>
- Department for Environment, Food and Rural Affairs (DEFRA), (2005). Marine Spatial Planning Literature Review, United Kingdom.
- Department of Environment, Food and Rural Affairs, (2009). *Our Seas—A Shared Resource—High-level marine objectives*. Defra: London, UK. 12 p.
- Department of Environmental, Food and Rural Affairs. (2008). The Marine and Coastal Access Bill. United Kingdom.
- Department of Environment, Food and Rural Affairs, (2009). *Managing Our Marine Resources: the Marine Management Organization*. Defra: London, UK. 38 p.
- Derous, S., et al., (2007). *A Biological Valuation Map for the Belgian Part of the North Sea*. Biology Department, University of Ghent: Ghent, Belgium. 100 p.
- Derous, S., T. Agardy, H. Hillewaert, et al., (2007). A concept for biological evaluation in the marine environment. *Oceanologia*, 49 (1), pp. 99-128.
- des Clers, S., Lewin, S., Edwards, D., Searle, S., Lieberknecht, L., and Murphy, D., (2008). *FisherMap. Mapping the grounds: recording fishermen's use of the seas*. A report published for the Finding Sanctuary Project.
- de Waal, C. (2001). On Peirce. Belmont, CA: Wadsworth.
- Doherty, P. A., & Butler, M. (2006). Ocean zoning in the Northwest Atlantic. *Marine Policy*, 30(4), 389-391.
- Douve, F. (2008). The importance of marine spatial planning in advancing ecosystem-based sea use management. *Marine Policy*, 32(5), 762-771.
- Douve, F., & Ehler, C. (2001). Ecosystem-based marine spatial management: An evolving paradigm for the management of coastal and marine places. *Management*, 44, 563-566.
- Douve, F., Maes, F., Vanhulle, A., & Schrijvers, J. (2007). The role of marine spatial planning in sea use management: the Belgian case. *Marine Policy*, 31(2), 182-191.
- Druel, E., & Gjerde, K. M. (2014). Sustaining marine life beyond boundaries: options for an implementing agreement for marine biodiversity beyond national jurisdiction under the United Nations Convention on the Law of the Sea. *Marine Policy*, 49, 90-97.
- E**
- Eagle, J., Sanchirico, J. N., & Thompson Jr, B. H. (2008). Ocean zoning and spatial access privileges: rewriting the tragedy of the regulated ocean. *NYU Envtl. LJ*, 17, 646.
- Edward, D. (2009). Crises as Learning Triggers: Exploring a Conceptual Framework of Crisis Induced Learning. *Journal of Contingencies and Crisis Management*, 17(3), 179-188.
- Edwards, S. (2008). Ocean zoning, first possession and Coasean contracts. *Marine Policy*, 32(1), 46-54.
- Ehler, C. (2014). A Guide to Evaluating Marine Spatial Plans, Paris, UNESCO, 2014. IOC Manuals and Guides, 70; ICAM Dossier 8.
- Ehler, C. (2008). Conclusions: benefits, lessons learned, and future challenges of marine spatial planning. *Marine Policy*, 32(5), 840-843.
- Ehler C., Douve F. (2007). Visions for a sea change. Report of the first international workshop on marine spatial planning. Intergovernmental oceanographic commission and man and the biosphere programme. IOC manual and guides. 48, IOCAM Dossier, 4, UNESCO, Paris.
- Ehler, C., and Douve, F. (2009). Marine spatial planning, a step-by-step approach towards ecosystem-based management.
- Ehler C., et al. (1986). The Gulf of Mexico coastal and ocean zones strategic assessment data atlas. Washington DC, Government printing office. 163 maps + text.

- Ekebom, J., et al., (2008). *Towards marine spatial planning in the Baltic Sea*. BALANCE Technical Summary Report 4/4. Copenhagen, Denmark: Geological Survey of Denmark and Greenland. 133 p.
- Environmental Protection Agency. (2010). *National oil spill contingency plan*. Retrieved from Environmental Protection Agency website http://www.epa.gov.gh/index.php?option=com_docman&task=cat_view&gid=112&Itemid=116.
- Evans, M. (2006). Maritime Boundary Delimitation. In: *The Oxford Handbook of the Law of the Sea*.

F

- Fabozzi, F. J., Coggin, T. D., Collins, B., & Ritchie, J. (1995). *Investment management* (Vol. 2). Upper Saddle River, NJ: Prentice Hall.
- Fahrenkrug, K., & Rave, T. (2007). Best Practice in Marine Spatial Planning—Description of four Case Studies in Europe and Overseas Final Report. *Raum & Energie, Hamburg*.
- FAO. (2004). What is Local Knowledge? Food and Agriculture Organization of the United Nations; Gender and Development Service. FAO website. Retrieved December 11th, 2016 from <ftp://ftp.fao.org/docrep/fao/007/y5610e/y5610e00.pdf>.
- Farrell, J. L., & Reinhart, W. J. (1997). *Portfolio management: theory and application*. McGraw-Hill.
- Federal Maritime and Hydrographic Agency, (2008). Draft Spatial Plan for the German Exclusive Economic Zone. Germany. Florida Keys National Marine Sanctuary management plan. (Downloadable at <http://floridakeys.noaa.gov/regs/zoning.html>).
- Fishbein, M. (1979). A theory of reasoned action: some applications and implications.
- Fischer, T. B. (2007). *The theory and practice of strategic environmental assessment*: Earthscan, London.
- Fischer, T. B. (2010). *The theory and practice of strategic environmental assessment: towards a more systematic approach*. Routledge.
- Flannery, W., Ellis, G., Nursey-Bray, M., van Tatenhove, J. P. M. ... O'Hagan, A. M. (2016). Exploring the winners and losers of marine environmental governance/Marine spatial planning: Cui bono? "More than fishy business": epistemology, integration and conflict in marine spatial planning/Marine spatial planning: power and scaping/Surely not all planning is evil? / Marine spatial planning: a Canadian perspective/Maritime spatial planning – "ad utilitatem omnium"/Marine spatial planning: "it is better to be on the train than being hit by it"/Reflections from the perspective of recreational anglers and boats for hire/Maritime spatial planning and marine renewable energy. *Planning Theory & Practice*, 17(1), 121–151. <https://doi.org/10.1080/14649357.2015.1131482>.
- Flowers, P. (2009). Research philosophies—importance and relevance. *Economic Record*, 1(3), 1-5.
- Foley, M. M., Halpern, B. S., Micheli, F., Armsby, M. H., Caldwell, M. R., Crain, C. M. ... & Carr, M. H. (2010). Guiding ecological principles for marine spatial planning. *Marine Policy*, 34(5), 955-966.
- Foster, E., M. Haward, and S. Coffen-Smout. (2005). Implementing integrated oceans management: Australia's south east regional plan (SERMP) and Canada's eastern Scotian shelf integrated management (ESSIM) initiative. *Marine Policy* 29:391–405.
- French, A., Macedo, M., Poulsen, J., Waterson, T., & Yu, A. (2008). Multivariate analysis of variance (MANOVA).

G

- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction*. Longman Publishing.

- Gardner, J. V., L. A. Mayer, and A. A. Armstrong (2006). Mapping supports potential submission to U.N. Law of the Sea, *Eos Trans. AGU*, 87(16), 157.
- GBC. (2007). *Recommendations for Budget 2007: Opportunities for a Greener Canada*. <http://www.greenbudget.ca/2007/main.html>
- Gee, K., Kannen, A., Glaeser, B., & Sterr, H. (2004). National ICZM strategies in Germany: A spatial planning approach. *Managing the Baltic Sea* (Schernewski, G., and N. Loser, Eds.). *Coastline Reports*, 2, 23-33.
- Geertz, C. (2002). Thick description: Toward an interpretive theory of culture. *The interpretation of cultures*.
- Gennaro, A. M. (2004). Oil Pollution Liability and Control under International Maritime Law: Market Incentives as an Alternative to Government Regulation.
- Gibbs, G. (2002). *Qualitative data analysis: Explorations with NVivo (Understanding social research)*. Buckingham: Open University Press.
- Gibbs, G. (2007) Analysing Qualitative Data, part of the Qualitative Research Kit, ed. U. Flick, Sage, London
- Gilliland, P.M., & Laffoley, D. (2008). Key elements and steps in process of developing ecosystem-based marine spatial planning. *Marine Policy*, 32(5), 787-796.
- Gioia, D. A., & Pitre, E. (1990). Multiparadigm perspectives on theory building. *Academy of management review*, 15(4), 584-602.
- Glaser, B. (2003). *The grounded theory perspective II: Descriptions of remodelling of grounded theory methodology*. Mill Valley, CA: Sociology Press.
- Glaser, B. and Strauss, A. (1967). *Discovery of Grounded Theory*. Chicago, IL: Aldine.
- Glaser, B.G. (1992). *Basics of Grounded Theory Analysis*. Mill Valley, CA: Sociology Press.
- Glass, A. J., & Saggi, K. (1998). International technology transfer and the technology gap. *Journal of development economics*, 55(2), 369-398.
- Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P. ... Wiseman, K. (2013). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management*, 74, 90-101. <http://doi.org/10.1016/j.ocecoaman.2012.08.013>
- Government of Canada. (2007). Eastern Scotian Shelf integrated ocean management plan. Strategic plan. 68p.
- Graham, K. Mullen, D. (2016). Environment and Energy Bulletin: A New Marine Regulatory Regime on B.C.'s North and Central Coast? The Business Council of British Columbia. *Environment and energy Bulletin*, 8(1) 1-6.
- Great Barrier Reef Marine Park Authority. (1975). The Great Barrier Reef Marine Park Act. Australia.
- Green, R., & Vasilakos, N. (2011). The economics of offshore wind. *Energy Policy*, 39(2), 496-502.
- Green Shores. (2009). Coastal Shore Jurisdiction in British Columbia. Issue Sheet, October 2009. Retrieved October 15th, 2016 from http://www.salishsea.ca/resources/Riparianrights/Greenshores%20JurisdictionIssueSheet_finalVer4.pdf

- Griffis, R. B., & Kimball, K. W. (1996). Ecosystem approaches to coastal and ocean stewardship. *Ecological Applications*, 6(3), 708-712.
- Groves, H. (2005). Offshore oil and gas resources: economics, politics and the rule of law in the Nigeria-Sao Tome e Principe joint development zone. *Journal of International Affairs*, 81-96.
- Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Newbury Park, CA: Sage.
- H**
- Haines, A., & Cassels, A. (2004). Can the millennium development goals be attained? *Bmj*, 329(7462), 394-397.
- Halpern, Ben S., et al., (2008). Managing for cumulative impacts in ecosystem based management through ocean zoning. *Ocean and Coastal Management*, 51, 203-211.
- Hammersley, M. (1997). 'Qualitative data archiving: some reflections on its prospects and problems', *Sociology*, vol. 31(1): 131-42.
- Harden-Davies, H. (2016). Marine science and technology transfer: Can the Intergovernmental Oceanographic Commission advance governance of biodiversity beyond national jurisdiction?. *Marine Policy*, 74, 260-267.
- Harrould-Kolieb, E. R., & Kolieb, J. A. (2014). Marine and coastal resources and conflict in a high-CO2 world. *Conflict-sensitive adaptation to climate change in Africa*, 121.
- Haward, M., and J. Vince. (2008). *Ocean governance in the twenty-first century: Managing the blue planet*. Cheltenham, U.K.: Edward Elgar.
- Hassan, D., Kuokkanen, T., & Soininen, N. (Eds.). (2015). *Transboundary Marine Spatial Planning and International Law*. Routledge.
- Heberlein, T.A., & Baumgartner, R. (1978). Factors affecting response rates to mailed questionnaires: a quantitative analysis of the published literature. *American Sociological Review*, 43 (4), 447-462
- Heinrichs, Bernhard (2007). 'Plan Coast-Contribution to Marine Spatial Planning'. (Paper presented at 4th International Plan Coast Conference, Berlin, 21 November 2007.)
- Hendrick, D. (2005). The New Frontier: Zoning rules to protect marine resources. *E: The Environmental Magazine*, 16(2), 14.
- Heipke, C. (2010). Crowdsourcing geospatial data. *ISPRS Journal of Photogrammetry and Remote Sensing*, 65(6), 550-557.
- Hildebrand, L. P., Pebbles, V., & Fraser, D. A. (2002). Cooperative ecosystem management across the Canada-US border: approaches and experiences of transboundary programs in the Gulf of Maine, Great Lakes and Georgia Basin/Puget Sound. *Ocean & coastal management*, 45(6), 421-457.
- Hinds, P.S., Vogel, R.J., Clarke-Steffen, L. (1997). 'The possibilities and pitfalls of doing a secondary analysis of a qualitative data set', *Qualitative Health Research*, vol. 7(3): 408-24.
- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J., (2006). *Evaluating Effectiveness: A framework for assessing management effectiveness of protected areas*. 2nd edition. IUCN: Gland, Switzerland and Cambridge, UK. xiv + 105 pp.
- Holland, P. W. (1986). Statistics and causal inference. *Journal of the American Statistical Association* 8: 945-960.
- Hox, J.J., and Boeije, H.R., (2005). *Data collection, primary versus secondary: Encyclopaedia of Social Measurement*, pp. 593 - 599. (Part of book or chapter of book).
- I**
- Indigenous and Northern Affairs. (2010) About British Columbia First Nations. Government of Canada. Retrieved December 5th, 2016 from <https://www.aadncaandc.gc.ca/eng/1100100021009/1314809450456>

Interdepartmental Directors Consultative Committee North Sea. *Integrated Management Plan for the North Sea 2015*. (2006). The Netherlands Joint Nature Conservation Committee (JNCC), 2004. Common Standards for Monitoring. Peterborough, UK.

Intergovernmental Oceanographic Commission. (2009). *Marine Spatial Planning: A step by step approach towards ecosystem-based management*.

IOC (2015) unesco-ioc.org/marinesp.be

ITLOS (2015). Retrieved from International Tribunal for the Law of the Sea, Cases and Provisional Measures website:
https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.23_prov_meas/C23_Request_prov_measures_translation_Reg.pdf

J

- Jagota, S. P. (1993). Maritime Boundary and Joint Development Zones: Emerging Trends. *Ocean Yearbook Online*, 10(1), 110-131.
- Jakobsson, M., Macnab, R., Mayer, L., Anderson, R., Edwards, M., Hatzky, J., ... & Johnson, P. (2008). An improved bathymetric portrayal of the Arctic Ocean: Implications for ocean modeling and geological, geophysical and oceanographic analyses. *Geophysical Research Letters*, 35(7).
- Jakobsson, M., J. V. Gardner, P. Vogt, L. A. Mayer, A. Armstrong, J. Backman, R. Brennan, B. Calder, J. K. Hall, and B. Kraft (2005), Multibeam bathymetric and sediment profiler evidence for ice grounding on the Chukchi borderland, Arctic Ocean, *Quat. Res.*, 63, 150–160.
- James, W. (1995, 1907). Pragmatism. New York: Dover. Johnson, R. B., & Christensen, L. B. (2004). Educational research: Quantitative, qualitative, and mixed approaches. Boston, MA: Allyn and Bacon.
- Jay, S., Alves, F. L., O'Mahony, C., Gomez, M., Rooney, A., Almodovar, M., ... & Tello, O. (2016). Transboundary dimensions of marine spatial planning: Fostering inter-jurisdictional relations and governance. *Marine Policy*, 65, 85-96.
- Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative science quarterly*, 24(4), 602-611.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26.
- Johnson, S. P. (1993). *The Earth Summit: The United Nations Conference on Environment and Development (UNCED)*. London: Graham & Trotman.
- Johnston, D. M. (1988). *The theory and history of ocean boundary-making*. McGill-Queen's Press-MQUP.
- Johnston, M. (1997). What Iceberg? Crisis Management in Action. *International Journal of Dairy Technology*, 50(3), 89-95.
- Jones, P. Lieberknecht, L.M. Qui, W. (2016) Marine Spatial Planning in Reality: Introduction to Case Studies and Discussion of Findings. *Marine Policy* (71) p. 256-264 doi:10.1016/j.marpol.2016.04.026.
- Jordan, J. (2009). When heads roll: Assessing the effectiveness of leadership decapitation. *Security Studies*, 18(4), 719-755.
- Juda, L. (2003). Changing national approaches to ocean governance: the United States, Canada, and Australia. *Ocean Development & International Law*, 34(2), 161-187.
- Juda, L. (2010). The European Union and the Marine Strategy Framework Directive: continuing the development of European ocean use management. *Ocean Development & International Law*, 41(1), 34-54.

K

- Katsanevakis, S., Stelzenmüller, V., South, A., Sørensen, T. K., Jones, P. J., Johnson, K., Kerr, S., Badalamenti, F., Anagnostou, C., Breen, P. and Chust, G. (2011) 'Ecosystem-based marine spatial management: review of concepts, policies, tools, and critical issues', *Ocean & Coastal Management*, 54(11), 807-820.
- Karkkainen, B. C. (2004). New governance in legal thought and in the world: some splitting as antidote to overzealous lumping. *Minn. L. Rev.*, 89, 471.
- K. Appeaning Addo, P. N. Jayson-Quashigah, K. S. Kufogbe (2012) "Quantitative Analysis of Shoreline Change Using Medium Resolution Satellite Imagery in Keta, Ghana", *Marine Science*, Vol. 1 No. 1, 2011, pp. 1-9. doi: 10.5923/j.ms.20110101.01.
- Kelleher, G., (1999). *Guidelines for Marine Protected Areas*. IUCN: Gland, Switzerland and Cambridge, UK. 107p.
- Kenchington, R. A., & Day, J. C. (2011). Zoning, a fundamental cornerstone of effective Marine Spatial Planning: lessons learnt from the Great Barrier Reef, Australia. *Journal of Coastal Conservation*, 15(2), 271-278.
- Kenchington, R., and Woodley S. (2002). *The Great Barrier Reef: Finding the Right Balance*. Melbourne University Press, Victoria, Australia.
- Kimball, L. A. (2001). *International ocean governance: using international law and organizations to manage marine resources sustainably*. International Union for Conservation of Nature, Gland, Switzerland, and Cambridge, UK, 124 pp.
- Kimball, L. A. (2003). *International ocean governance: using international law and organizations to manage marine resources sustainably*. Iucn.
- King, S. B. (2010). Imagination Is Stronger Than Knowledge. *JACC: Cardiovascular Interventions*, 3(9), 992-993.
- Klenke, M., and H. W. Schenke (2002), A new bathymetric model for the central Fram Strait, *Mar. Geophysics. Res.*, 23, 367–378.
- Kraan, M. (2009) *Creating space for fishermen's livelihoods: Anlo-Ewe beach seine fishermen's negotiations for livelihood space within multiple governance structures in Ghana*, African Studies Centre, Leiden.
- Kull, M., Moodie, J., Giacometti, A., Morf, A., (2017). Lessons Learned: Obstacles and Enablers when Tackling the Challenges of Cross Border Maritime Spatial Planning Experiences from Baltic SCOPE. Espoo and Gothenburg-Baltic SCOPE: Stockholm. Available online: http://www.balticscope.eu/content/uploads/2015/07/BalticScope_LL_WWW.pdf.
- Kuper, A. (1994). Culture, identity and the project of a cosmopolitan anthropology. *Man*, 537 – 554.
- Kusek, J.Z, and R.C. Rist, (2004). Ten Steps to a Results-Based Monitoring and Evaluation System. The World Bank: Washington, DC.
- Kyriazi, Z., Maes, F., Rabaut, M., Vincx, M. and Degraer, S. (2013). 'The integration of nature conservation into the marine spatial planning process', *Marine Policy*, 38, 133-139.
- L**
- Lafferty, W. M., & Eckerberg, K. (Eds.). (2013). *From the Earth Summit to Local Agenda 21: working towards sustainable development* (Vol. 12). Routledge.
- Lawrence D., Kenchington R., and Woodley S. (2002). *The Great Barrier Reef: Finding the right balance*. Melbourne University Press, Victoria, Australia. 263 p.

- Lawrence D. Lafolley D., et al. (2004). The Ecosystem Approach: Coherent actions for marine and coastal environments. A report to the UK government. Peterborough. English Nature. 65p.
- Lee, E., Mishna, F., & Brennenstuhl, S. (2010). How To Critically Evaluate Case Studies in Social Work. *Research on Social Work Practice*, 20(6), 682-689.
- Leedy, P. D., & Ormrod, J. E. (2005). Practical research. *Planning and design*, 8.
- Lewins, A., & Silver, C. (2007). Using Software for Qualitative Data Analysis: A Step-by-Step Guide.
- Lewis, M. W., & Grimes, A. I. (1999). Metatriangulation: Building theory from multiple paradigms. *Academy of Management Review*, 24(4), 672-690.
- Li, H. (2006). The impacts and implications of the legal framework for sea use planning and management in China. *Ocean & Coastal Management* 49: 717-726.
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of psychology*.
- Lincoln, Y. S., & Guba, E. E. (1986). Research, evaluation, and policy analysis: Heuristics for disciplined inquiry. *Review of Policy Research*, 5(3), 546-565.
- Lindeboom, H., J. Geurts van Kessel, and L. Berkenbosch, (2005). *Areas with special ecological values on the Dutch Continental Shelf*. Ministerie van Verkeer en Waterstaat. Report RIKZ/2005.008. 103 p.
- M**
- Maes, F. (2008). The international legal framework for marine spatial planning. *Marine Policy*, 32(5), 797-810.
- MacLean, M., S. Coffen-Smout, G. Herbert, B. Smith, and T. Hall, eds. (2009). Proceedings of the 4th Eastern Scotian Shelf Integrated Management (ESSIM) Forum Workshop, Halifax, Nova Scotia, November 26–27, 2008. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2872. www.dfo-mpo.gc.ca/Library/336858.pdf
- Maes, F., et al, (2005) A Flood Space: toward a spatial structure plan for sustainable management of the North Sea. Brussels: *Belgian Science Policy*. p 204.
- Maes, F., Schrijvers, J., Van Lancker, V., Verfaillie, E., Degraer, S., Deraus, S., DeWachter, B., Volckaert, A., Vanhulle, A., Vandenabeele, P., Cliquet, A., Douvere, F., Lambrecht, J. And Makgill, R., (2005). *Towards a spatial structure plan for sustainable management of the sea*. Research in the framework of the BELSPO Mixed Actions, June, 539 p.
- Maguire, B., Potts, J., & Fletcher, S. (2011). Who, when, and how? Marine planning stakeholder involvement preferences—A case study of the Solent, United Kingdom. *Marine pollution bulletin*, 62(11), 2288-2292.
- Mansfield, E. (1986). Patents and innovation: an empirical study. *Management science*, 32(2), 173-181.
- MaPP. (2015). Marine Planning Partnership for the North Pacific Coast Implementation Funding Support Project Memorandum of Understanding. MaPP website. Retrieved September 15th, 2016 from http://mappocean.org/wp-content/uploads/2015/09/MOU_MaPP_Implementation_31Mar15_final_for_web.pdf
- MaPP. (2016). MaPP Governance and Process Structures. MaPP website Retrieved August 10th, 2016 from <http://mappocean.org/about-mapp/governance/>
- Marine Spatial Planning Literature Review, Department for Environment, Food and Rural Affairs (DEFRA), UK, 2005, 34pp. See: <http://mspp.abpmer.co.uk/mspp.index.aspS>, (last visited on 15 May 2006).
- Mark, S., Philip, L., & Adrian, T. (2009). Research methods for business students. Harlow: Prentice Hall.
- Marsden, S., & Koivurova, T. (2013). *Transboundary Environmental Impact Assessment in the European Union: The Espoo Convention and Its Kiev Protocol on Strategic Environmental Assessment*. Routledge.

- Martilla, J.A. & James, J.C. (1977). Importance-performance analysis. *Journal of Marketing*, 41, 77-79.
- Matos, S., & Petrov, O. (2013). An integrative LCA approach to evaluate sustainable new technology development: The case of lignin based resin.
- Matten, D., & Crane, A. (2005). What is stakeholder democracy? Perspectives and issues. *Business Ethics: A European Review*, 14(1), 6-13.
- Mazzochi, F. (2006). Western Science and Traditional Knowledge: Despite Their Variations, Difference Forms of Knowledge Can Learn from Each Other. *EMBO Reports* 7(5) pp. 463-466. 10.1038/sj.embor.7400693.
- McCann, J. (ed) (2016). Advice from the Field: Tools and Techniques for Facilitating a Realistic and Effective Marine Spatial Planning (MSP) Process. University of Rhode Island Coastal Resources Centre.
- McCann, J., T. Smythe, G. Fugate, K. Mulvaney, and D. Turek. (2014). Identifying Marine Spatial Planning Gaps, Opportunities, and Partner: An Assessment. Coastal Resources Center and Rhode Island Sea Grant College Program. Narragansett, R.I. 60 pp.
- McCrimmon, D, and Fanning, L. (2011). Marine Spatial Planning: International Lessons for Canadian Development. Gulf Reg. Oceans Mgmt. Ser. 2011/01: vi + 35 p.
- McGrath, K. (2003). Feasibility of Using Zoning to Reduce Conflicts in the Exclusive Economic Zone, *The Buff. Envtl. LJ*, 11, 183.
- McKenna, J., Cooper, A., & O'Hagan, A. M. (2008). Managing by principle: A critical analysis of the European principles of Integrated Coastal Zone Management (ICZM). *Marine Policy*, 32(6), 941-955.
- McLaughlin, R. J. (1997). Settling trade-related disputes over the protection of marine living resources: UNCLOS or the WTO. *Geo. Int'l Envtl. L. Rev.*, 10, 29.
- McLeod, K. L., & Leslie, H. M. (2009). Why ecosystem-based management. *Ecosystem-based management for the oceans*, 3-12.
- MEAM. (2015). Planning Canada's Pacific Coast: What Made it Work. *Marine Ecosystems Management* 8:6. Retrieved August 4th, 2016 from <https://meam.openchannels.org/meam/issue/september-2015-86>.
- Mendel, P. J. (2002). International standardization and global governance: the spread of quality and environmental management standards. *Organizations, Policy and the Natural Environment* Eds AJ Hoffman, MJ Ventresca (Stanford University Press, Stanford, CA) pp, 407-424.
- Menkel-Meadow, C. (2008). Getting to 'Let's Talk': Comments on Collaborative Environmental Dispute Resolution Processes. *Nevada Law Journal*, 8, 835-852.
- Mensah, J. V., & Antwi, B. K. (2002). Problems of artisanal marine fishermen in Ghana: the way ahead. *Singapore Journal of Tropical Geography*, 23(2), 217-235.
- Mensah, M., Korateng, K., Bortey, A. and Yeboah, D. (2006) 'The state of world fisheries from a fishworkers perspective: The Ghanaian situation'.
- Mensah, T. A. (2006). Joint development zones as an alternative dispute settlement approach in maritime boundary delimitation. In *Maritime Delimitation* (pp. 151-160). Brill.
- Mervaud, C. (1985). Voltaire et Frédéric II: une dramaturgie des Lumières (1736-1778). *Studies on Voltaire and the eighteenth century*, (234), 1-617.
- Michael, P. J., et al. (2003), Magmatic and amagmatic seafloor generation at the ultraslow-spreading Gakkel ridge, Arctic Ocean, *Nature*, 423, 961-965.
- Michalski, G. (2007). Portfolio management approach in trade credit decision making. *Romanian Journal of Economic Forecasting*, 3, 42-53.
- Miles, E. L. (1999). The concept of ocean governance: evolution toward the 21st century and the principle of sustainable ocean use. *Coastal Management*, 27(1), 1-30.

- Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods*.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Milon, J.W., Holland, S.M. & Whitmarsh, D.J. (2000). Social and economic valuation methods. In Seaman, W. (Ed). *Artificial reef evaluation with application to natural marine habitat* (pp.165-194).CRC Press
- Ministerie van Verkeer en Waterstaat. (2008). National water plan: The Netherlands, safe and liveable delta, now and in the future. (A summary). The Netherlands.
- Ministerie van Verkeer en Waterstaat. (2008). *Pre-policy Document on the North Sea*. The Netherlands.
- Ministerie van Verkeer en Waterstaat. (2008). Verkenning van economische en ruimtelijke ontwikkelingen op de Noordzee. 171p.
- Ministry of Housing, Spatial Planning and the Environment. (1965). *The Spatial Planning Act*. The Netherlands.
- Ministry of the Environment. (2006). Integrated Management Plan of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands. Norway.
- Mizukami, S. (2002). *U.S. Patent Application No. 10/324,322*.
- Monahan, D. Nichols, S. Sutherland, M. (2000). Good Governance in Canada's Offshore and Coastal Zone: Towards an Understanding in Marine Boundary Issues. Conference Presentation at Conference on the Coastal Cadastre in New Zealand [Nichols and Monahan, 1999], at the Atlantic Provinces Coastal Zone Steering Committee [Hughes-Clarke et al., 2000] and at Coastal Zone 2000 in Saint John [Nichols, et al., 2000]
- Monmonier, M., (1996). *How to Lie with Maps*. University of Chicago Press: Chicago, IL, USA. 207 p.
- Montano, D. E., and Kasprzyk, D. (2015). Theory of reasoned action, theory of planned behaviour, and the integrated behavioural model. *Health behaviour: Theory, research and practice*.
- Morf, A., Moodie, J., Gee, K., Giacometti, A., Kull, M., Piwowarczyk, J., ... & Strand, H. (2019). Towards sustainability of marine governance: Challenges and enablers for stakeholder integration in transboundary marine spatial planning in the Baltic Sea. *Ocean & Coastal Management*, 177, 200-212.
- Moutinho, L., Hutcheson, G., & Rita, P. (2006). *Advances in Doctoral Research in Management*. Singapore: World Scientific Publishing Co. Pte. Ltd.
- Murphy, J. P. (1990). *Pragmatism: From Peirce to Davidson*. Boulder, CO: Westview.
- N**
- Neuendorf, K. A. (2002). *The content analysis guidebook*. London: Sage Publications Ltd.
- Neyman, J. (1923). *Roczniki Nauk Rolniczych* (Annals of Agricultural Sciences) Tom X: 1–51 [In Polish]. Translated as “On the application of probability theory to agricultural experiments. Essay on principles. Section 9,” by D. M. Dabrowska and T. P. Speed (Statistical Science 5: 465–472, 1990).

NGDC (2016) ngdc.noaa.gov

Ngoile, M. A., & Linden, O. (1997). Lessons learned from Eastern Africa: the development of policy on ICZM at national and regional levels. *Ocean & Coastal Management*, 37(3), 295-318.

Norse, E. A. (2002, December). A zoning approach to managing marine ecosystems. *In workshop on improving regional ocean governance in the United States* (pp. 53-57).

Norse, E. A. (2005). Ending the range wars on the last frontier: zoning the sea. *Marine conservation biology: the science of maintaining the sea's biodiversity*, 422-443.

Norse, E. A. (2008). EBM perspective: Ocean zoning is inevitable. *Washington, DC: Marine Conservation Biology Institute. www.mcbi.Org/publications/publications.htm* (accessed October 20, 2010).

Nowlan, L. (2016). Brave New Wave: Marine Spatial Planning and Ocean Regulation on Canada's Pacific. *Journal of Environmental Law and Practice* (29). p. 152-201.

NRTEE (National Roundtable on the Environment and the Economy). (2007). *Eastern Scotian Shelf Integrated Management (ESSIM) Project*. <http://www.nrtee-trnee.ca/eng/publications/casestudies/natural-heritage/eng/Essim-Case-Study-Full-Report-eng.html>

O

OAG (Office of the Auditor General). (2005). *Report of the Commissioner of the Environment and Sustainable Development—Chapter 1: Fisheries and Oceans Canada—Canada's Oceans Management Strategy*. OAG, Ottawa. www.oag-bvg.gc.ca/.../parlcesd20050901e14948.html

O'Boyle, R., and T. Worcester. (2009). Eastern Scotian Shelf, Canada. In *Ecosystem-based management for the oceans*, ed. Karen McLeod and Heather Leslie, 253–267. Washington, DC: Island Press.

Olsen, S. (2003). Framework and Indicators for Assessing Progress in Integrated Coastal Management Initiatives. *Ocean and Coastal Management* 46 (2003) pp. 347-361. doi: 10.1016/S0964-5691(03)00012-7.

Olsen, S. B., Olsen, E., & Schaefer, N. (2011). Governance baselines as a basis for adaptive marine spatial planning. *Journal of Coastal Conservation*, 15(2), 313-322.

Olsen S., Tobey J., and Kerr M. (1997). A common framework for learning from ICM experience. *Ocean and Coastal Management* 37: 155-174.

Ontology-Research. (2016). Retrieved from Ontology-Research Methodology website: <http://research-methodology.net/research-philosophy/ontology/>

Oppermann, M. (2000). "Triangulation—A Methodological Discussion." *International Journal of Tourism Research* 2:141-46.

Ostrom, E. McGinnis, M. (1992). Design Principles for Local and Global Commons. Department of Political Science Workshop in Political Theory and Policy Analysis, Indiana University. Retrieved May 18th, 2016 from <http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/5460/design%20principles%20for%20local%20and%20global%20commons.pdf?sequence=1&isAllowed=y>.

P

Paasi, A. (2005). The Changing Discourses on Political Boundaries; Mapping the Backgrounds, Contexts and Contents. In Houtum, H. van, Kramsch, O. T., & Zierhofer, W. (Eds)... (2005). *Bordering space*. Aldershot, Hants, England; Burlington, VT: Ashgate.

Parma, A. M. (1998). What can adaptive management do for our fish, forests, food, and biodiversity? *Integrative Biology: Issues, News, and Reviews*, 1(1), 16-26.

Park, W. G. (2008). International patent protection: 1960–2005. *Research policy*, 37(4), 761-766.

- Pearson Allyn and Bacon, (2006). Instructor's Manual and Test Bank for Neuman, Social Research Methods, *Qualitative and Quantitative Approaches*.
- Peter, J. (2015). Marine Protected Areas and Marine Spatial Planning: co-evolution or competition? Retrieved from UCL Department of Geography Website: <http://www.geog.ucl.ac.uk>
- Pinnacle. (2016, December 27). Asset Management: *Distinctive Service. Effective Advice*. Retrieved from <https://www.pnfp.com/wealth-management/asset-management/>
- Pickton, D. W., & Wright, S. (1998). What's swot in strategic analysis? *Strategic change*, 7(2), 101-109.
- Pomeroy, Robert, and Fanny Douvere (2008). The management of stakeholders in the marine spatial planning process. *Marine Policy*. Vol. 32, no. 5. September. pp. 816-822. (downloadable at: ioc3.unesco.org/marinesp).
- Popay, J., Rogers, A., Williams, G. (1998). 'Rationale and standards for the systematic review of qualitative literature in health services research', *Qualitative Health Research*, vol. 8 (3): 329-40.
- Poverty, E. (2015). Millennium development goals. *United Nations*. Available online: <http://www.un.org/millenniumgoals/> (accessed on 23 August 2011).
- Public Interest and Accountability Committee (PIAC). (2012). *Report on Petroleum Management for 2011*. Accra: PIAC.

Q

- Queffelec, B., & Maes, F. (2015). Transboundary maritime spatial planning across the French–Belgian maritime borders. *Transboundary Marine Spatial Planning and International Law*, 154.

R

- Rangeley, R., and M. King. 2005. WWF Canada, Atlantic Regional Office. Letter to Eric Theriault, Canada-Nova Scotia Offshore Petroleum Board. April 11. www.cnsopb.ns.ca/pdfs/WWF_comments_on_draft_scope.pdf
- Randall, D. M., & Fernandes, M. F. (1991). The social desirability response bias in ethics research. *Journal of Business Ethics*, 10(11), 805-817.
- Redfern, S. J., & Norman, I. J. (1994). Validity through Triangulation. *Nurse Researcher*, 2, 41-56.
- Richards, L. (1999). *Using NVivo in qualitative research*. Sage.
- Richards, L. (2005). *Handling qualitative data: A practical guide*. London: Sage.
- Ricketts, P., & Harrison, P. (2007). Coastal and ocean management in Canada: moving into the 21st century. *Coastal Management*, 35(1), 5-22.
- Ritchie, House, T. Q., & Quayle T. (2010). 'A system that works for the sea'? Exploring stakeholder engagement in Marine Spatial Planning. *Journal of Environmental Planning Management*, 53(6), 701-723.
- Ritchie, H. (2011). Ocean Zoning—Making Marine Management More Effective. *Journal of Environmental Policy & Planning*, 13(3), 317-319.
- Roach, J. A. (2013). Maritime Boundary Delimitation: United States Practice. *Ocean Development & International Law*, 44(1), 1-27.
- Royal Norwegian Ministry of the Environment, (2006). *Integrated Management Plan of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands*. Norway. 144 p.
- Rubin, D. B. (1974). Estimating causal effects of treatments in randomised and nonrandomised studies. *Journal of Educational Psychology* 66: 688–701.
- Rubin, D.B. (1990). Comment: Neyman (1923). and causal inference in experiments and observational studies. *Statistical Science* 5: 472–480.

Rutherford, R.J., G.J. Herbert, and S.S. Coffen-Smout. (2005). integrated ocean management and the collaborative planning process: the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative. *Marine Policy* 29: 75–83.

S

Sachs, J. D. (2005). *Investing in development: a practical plan to achieve the millennium development goals*. Earthscan.

Sandelowski, M. (1997). "'To be of use': enhancing the utility of qualitative research", *Nursing Outlook*, vol. 45(3): 125-32.

Schofield, C. H. (Ed.). (2002). *Global Boundaries: World Boundaries* (Vol. 1). Routledge.

Carleton, C., & Schofield, C. H. (2002). *Developments in the technical determination of maritime space: delimitation, dispute resolution, geographical information systems and the role of the technical expert*. Ibru.

Prescott, V., & Schofield, C. H. (2005). The maritime political boundaries of the world.

Schultz-Zehden, A., K. Gee, and K. Scibior, (2008). *Handbook on Integrated Maritime Spatial Planning*. Plan Coast Project. Berlin, Germany: s. Pro. 98 p.

Segura, A. (2006). *Management of oil wealth under the permanent income hypothesis: the case of São Tomé and Príncipe* (No. 6-183). International Monetary Fund.

Selvin, A. M., & Buckingham Shum, S. J. (2002). Rapid knowledge construction: a case study in corporate contingency planning using collaborative hypermedia. *Knowledge and Process Management*, 9(2), 119-128.

Seneadza, O. K. (2011). The law and practice in maritime boundary delimitation: lessons for the resolution of dispute between Cote d'Ivoire and Ghana. *Commonwealth Law Bulletin*, 37(2), 295-305.

Sheppard, B. H., Hartwick, J., and Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of consumer research*, 15(3), 325-343.

Sherman, K., and Hoagland, P. (2005). Driving forces affecting resource sustainability in large marine ecosystems. *ICES CM*, 1000, 07.

Short, C. (2010). Marine Plan Partnership for the North Pacific Coast (MaPP) [PDF file; Lecture Slides]

Silverman, D. (2000). *Doing Qualitative Research: A Practical Handbook*. London: Sage Publication.

Silverman, D. (2010). *Doing qualitative research*. London: Sage.

Simon, M. K., & Goes, J. (2013). Assumptions, limitations, delimitations, and scope of the study. Retrieved from dissertationrecipes.com.

Sivas, D., and M.R. Caldwell, (2008). A new vision for California ocean governance: comprehensive ecosystem-based ocean zoning. *Stanford Environmental Law Journal*. Vol. 27: 209-270.

Smith, A. E. (2005). Leximancer Manual, version 2.2. Retrieved 18 July, 2006.

Smythe, TC (2017). Marine spatial planning as a tool for regional ocean governance: An analysis of the New England ocean planning network. *Ocean & Coastal Management*, 135, 11-24.

Soininen, N., and Hassan, D. (2015). Marine spatial planning as an instrument of sustainable ocean governance. *Transboundary Marine Spatial Planning and International Law*, 1.

- Solberg, W. U. (2000). *The University of Illinois, 1894-1904: The shaping of the university*. University of Illinois Press.
- Spergel, Barry, and Melissa Moye, (2004). *Financing Marine Conservation: A Menu of Options*. Washington, DC: World Wildlife Fund, Center for Conservation Finance. 68 pp.
- Srdjevic, Z., Bajcetic, R., and Srdjevic, B. (2012). Identifying the criteria set for multicriteria decision making based on SWOT/PESTLE analysis: a case study of reconstructing a water intake structure. *Water resources management*, 26(12), 3379-3393.
- Stelzenmüller, V., Breen, P., Stamford, T., Thomsen, F., Johnson, K., Badalamenti, F., Borja, Á., Buhl-Mortensen, L., Carlstöm, J., D'Anna, G. and Dankers, N. (2013) 'Monitoring and evaluation of spatially managed areas: a generic framework for implementation of ecosystem based marine management and its application', *Marine Policy*, 37, 149-164.
- Stelzenmuller, V., et al., (2009). *Review of practical tools for marine planning*. Centre for Environment, Fisheries, and Aquaculture Science (CEFAS): Lowestoft, UK. 28 p.
- Stevens, L. and Aurand, D. (2008). Criteria for evaluating oil spill planning and response operations. A report to IUCN, The World Conservation Union (Technical report 07-02 (revised June 2008)).
- Steurer, R., and Martinuzzi, A. (2007). From environmental plans to sustainable development strategies. *European Environment*, 17(3), 147-15.
- Stewart, D. W., & Kamins, M. A. (1993). *Secondary research: Information sources and methods* (Vol. 4). Sage.
- St. Martin, K., and Madeleine Hall-Arber, (2008). The missing layer: geo-technologies, communities, and implications for marine spatial planning. *Marine Policy*. Vol. 32, no. 5. September. pp. 779-786. (Downloadable at: ioc3.unesco.org/marinesp).
- Stocks, A. (2016). The State of Coastal Communities in B.C. T. Buck Suzuki Foundation. Retrieved December 7th, 2016 from http://www.bucksuzuki.org/images/uploads/docs/StateofCoastalCommunities_WEB.pdf
- Strain, L., Rajabifard, A. and Williamson, I. (2006) Marine administration and spatial data infrastructure, *Journal of Marine Policy*, Vol. 30, Issue 4, pp. 431-441.
- Strauss, A. L. (1987). *Qualitative analysis for social scientists*. Cambridge: Cambridge University Press. (The original discussion of the analytic use of memos as a way of developing a theoretical understanding of the data.)
- Strauss, A.L. and Corbin, J. (1990). *Basics of Qualitative Research, Grounded Theory Procedures and Techniques*. 1st edn. Newbury Park: Sage Publications.
- Styles, P. (2011, July 26). Asset Management. *Water Supply Data Management, Infrastructure Planning and Asset Management*. Retrieved from <http://www.slideshare.net/cookjohnb/>
- Szabo, V. and Strang, V.R. (1997). 'Secondary analysis of qualitative data', *Advances in Nursing Science*, vol. 20(2): 66-74.

T

- Thorne, S. (1990). 'Secondary Analysis in Qualitative Research: issues and implications' in Morse, J.M. (Ed.) *Critical Issues in Qualitative Research Methods*. London:

Sage.

Tracy, S.J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative inquiry* 16 (10), 837-851.

U

UNEP & GEF-STAP (2014) “Marine Spatial Planning in Practice –Transitioning from Planning to Implementation. An Analysis of Global Marine Spatial Planning Experiences. Thomas, H.L. Olsen, S., Vestergaard, O. (eds), UNEP Nairobi

UNESCO (2009) ioc3.unesco.org/marinesp.be

UNESCO. (n.d). Marine Spatial Planning. Retrieved January 9, 2017, from <http://msp.iocunesco.Org/about/marine-spatial-planning>.

United Nations Economic Commission for Europe (ECE), (2008). *Spatial Planning: Key instrument for development and effective governance*. New York and Geneva. 46 p.

V

Valentine, G. (1997). Tell me about....: Using interviews as research methodology. In R. Flowerdew, & D. Martin, *Methods in Human Geography: A guide for students doing a research project* (pp. 110-127). Essex: Longman.

Vallega, A. (2013). *Fundamentals of integrated coastal management* (Vol. 49). Springer Science & Business Media.

Van Maanen, J. (2011). *Tales of the field: On writing ethnography*. Chicago: University of Chicago Press.

Velasquez, M., Andre, C., Shanks, T., Meyer, M. J., & Meyer, M. J. (1987). What is ethics? *Issues in Ethics*, 1(1), 1-2.

W

Watts, M. E., Ball, I. R., Stewart, R. S., Klein, C. J., Wilson, K., Steinback, C., ... & Possingham, H. P. (2009). Marxan with Zones: software for optimal conservation based land-and sea-use zoning. *Environmental Modelling & Software*, 24(12), 1513-1521.

WeAdapt. (2015). How to Involve Stakeholders. WeAdapt webpage Retrieved September 25th, 2016 from <https://www.weadapt.org/knowledge-base/transforming-governance/involving-stakeholders>

Weber, R. P. (1990). *Basic content analysis* (No. 49). Sage.

Webster, J., & Watson, R. T. (2002). Analysing the past to prepare for the future: Writing a literature review. *MIS quarterly*, xiii-xxiii.

Welsh, E. (2002, May). Dealing with data: Using NVivo in the qualitative data analysis process. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* (Vol. 3, No. 2).

Wilen, J., & Abbott, J. (2006). Estimates of the maximum potential economic impacts of marine protected area networks in the central California coast. *California Marine Life Protection Act Initiative*.

Willheim, E. (1989). Australia-Indonesia sea-bed boundary negotiations: proposals for a joint development zone in the Timor Gap. *Nat. Resources J.*, 29, 821.

White, J. W., Scholz, A. J., Rassweiler, A., Steinback, C., Botsford, L. W., Kruse, S., ... & Edwards, C. A. (2013). A comparison of approaches used for economic analysis in marine protected area network planning in California. *Ocean & coastal management*, 74, 77-89.

Whyte, W. F. E. (1991). *Participatory action research*. Sage Publications, Inc.

Y

Yin, R. K. (1993). *Application of Case Study Research*. Thousand Oaks, CA: Sage Publication.

Yin, R. K. (1994). *Case Study Research: Design & Methods* (2nd ed.). Thousand Oaks, CA: Sage Publication.

Young, O. R., Osherenko, G., Ekstrom, J., Crowder, L. B., Ogden, J., Wilson, J. A. ... & Peach, R. (2007). Solving the crisis in ocean governance: place-based management of marine ecosystems. *Environment: science and policy for sustainable development*, 49(4), 20-32.

Z

Zuschin, M., Stachowitsch, M., & Stanton, R. J. (2003). Patterns and processes of shell fragmentation in modern and ancient marine environments. *Earth-Science Reviews*, 63(1), 33-82.

Zwanenburg, K. C. T., A. Bundy, P. Strain, W. D. Bowen, H. Breeze, S. E. Campana, C. Hannah, et al. 2006. Implications of ecosystem dynamics for the integrated management of the Eastern Scotian shelf. *Can. Tech. Rep. Fish. Aquat. Sci.* 2652: xiii + 91 pp. <http://www.dfo-mpo.gc.ca/Library/324232.pdf>

*Our intellect does not only signify our ability to function on earth,
but for the responsibility of our generations unborn.*

- Bryan Buxton-Barnor -

WMU PUBLICATIONS
MMXXI