11-4-2018

Harnessing the potentials of blue economy for sustainable development of Nigeria

Hammed Damilare Ibrahim

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

Part of the Natural Resource Economics Commons, and the Place and Environment Commons

Recommended Citation
https://commons.wmu.se/all_dissertations/673

This Dissertation 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.
HARNESSING THE POTENTIALS OF BLUE ECONOMY FOR SUSTAINABLE DEVELOPMENT OF NIGERIA

By

HAMMED DAMILARE IBRAHIM
Federal Republic of Nigeria

A dissertation submitted to the World Maritime University in partial Fulfilment of the requirement for the award of the degree of

MASTER OF SCIENCE
In
MARITIME AFFAIRS
(OCEAN SUSTAINABILITY, GOVERNANCE AND MANAGEMENT)

2018
DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The content of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature): 

..........................................................

(Date): 

September , 2018

..........................................................

Supervised by: 

Professor Murray Rudd

Supervisor’s affiliation: 

Nippon Foundation Professorial Chair of Sustainable Marine Management and Ocean Governance

Ocean Sustainability, Governance and Management Specialization (OSGM)

World Maritime University, Malmö

Sweden
Alhamdulillah, all praise is due to Almighty Allah for His Grace and the successful completion of this dissertation. My first gratitude goes to my late parents: my mother (Late Hajia Shifa'u Iyabode Ibrahim) and my father (Late Mallam Zakariyyah Ayodele Ibrahim) for their kindness, care, love and good nurturing of me. I am most grateful for the guidance of my supervisor, Professor Murray Rudd as this dissertation would have been anything but accomplished without his encouragement and kind intellectual mentorship.

I warmly appreciate the knowledge, experiences and academic tutelage of my lecturers: Professor Lawrence Hildebrand, Professor Neil Bellefontaine Professor Ronán Long, Professor Murray Rudd, Dr. Mary Wisz, all other WMU faculty, and other visiting lecturers. My sincere appreciation also goes to the entire WMU staff, in particular Mrs. Susan Jackson (the Registrar) and Mrs. Lyndell Lundahl (Asst. Registrar) for their efforts in bringing us to the WMU and further administrative supports. I equally appreciate the kind support of the University Library, Mr. Chris Hoebeke (The University Librarian) and his amazing team, as well as the HSR staff and the Faculty assistants, Vicky Black and her new colleague.

I am most grateful for the rare privilege and opportunity of being a Sasakawa Fellowship Student at the WMU through the financial support of the Nippon Foundation under the auspice of the Sasakawa Peace Foundation (SPF). I immensely appreciate the special contributions and favours of the Chairman Yohei Sasakawa in my academic endeavour. Also, I appreciate the correspondence and warm welcome to Japan by Mr. Eisuke Kudo (Senior Advisor to Chairman Sasakawa), and the entire SPF staff, in particular Mr. Shinichi Ichikawa, Mr. Atsushi Kato and others for their dedication and support of all Sasakawa Fellows.

Finally, I am especially grateful to my fiancée, Hajia Husseinah Adama Yakubu for the understanding while patiently enduring the long distance between us during the time of my studies. I sincerely appreciate my two sisters, Hajia Fatima and Hajia Salamat and my entire family for their sincere wish for my success and constant encouragements all through the critical points of my life, especially when we suddenly lost our mum (May Allah have Mercy on her) last year. I am very grateful to my people at the Nigerian Institute of Oceanography and Marine Research for the opportunity to attend the WMU. My sincere thanks goes to everyone for their encouragement and faith in me. I also extend my appreciation to all the great friends and wonderful people I have met from more than 57 countries here at the WMU, and my old friends, back home in Nigeria for the great time we had and interesting memories we share. I appreciate the encouragements, prayers and sincere well-wishes of everyone for my success. I sincerely wish for every success and the very best in all their endeavours as well.

---

---
ABSTRACT

This dissertation is a study of the potentials of Blue Economy and how they could be harnessed for sustainable development of Nigeria. The research foregrounds a systematic analysis of Blue Economy and assessment of the major institutional and legal framework for the management of ocean resources in Nigeria.

As background to the study, the research examined the debates on the definition of Blue Economy, the key drivers and future trends. Furthermore, it analysed the relevant international legal and institutional frameworks for ocean governance regimes, particularly the United Nations Convention on the Law of the Sea (UNCLOS). The study then briefly analysed the major challenges of Blue Economy and examined the relationships between Blue Economy, Sustainable Development Goals and sustainability, in general.

The research methodology involved a review of the current institutional framework of the major sectors of Blue Economy and their governance regimes in Nigeria to assess the implementation mechanisms and identify the critical challenges. Further, the study conducted semi-structured interviews to further understand the issues, potentials, challenges and policy implications for harnessing the potentials of Blue Economy and actualizing the country’s development agenda.

The discussion was guided by the Driver-Pressure-State-Impact-Response (DPSIR) as a theoretical framework of analysis of the interviews results. The discussion further verged on various themes and issues related to diversification of the economy, Integration of the institutional frameworks, compliance and enforcement capacities, data management, investment and funding mechanisms for Blue Economy among others.

Finally, the research findings observed some cross-cutting issues which must be critically addressed for the proper implementation of Blue Economy in the country and actualization of the sustainable development agenda. To these ends, the research examined recommendations relating to- integration and clustering of activities, ensuring strong institutions and political will, entrenching Ecosystem-Based management, building strategic partnerships, and investing in technologies and capacity development.

KEY WORDS: Blue Economy, Sustainable Development, DPSIR, Ecosystem-Based Management, Ocean Governance, Institutional Analysis, Data management, Capacity Development.
# TABLE OF CONTENTS

DECLARATION ........................................................................................................... i
ACKNOWLEDGEMENTS .............................................................................................. ii
ABSTRACT ................................................................................................................... iii
TABLE OF CONTENTS ............................................................................................... iv
LIST OF TABLES .......................................................................................................... vi
LIST OF FIGURES ....................................................................................................... vi
LIST OF ABBREVIATIONS ........................................................................................... vii
1 INTRODUCTION ...................................................................................................... 1
2 BACKGROUND ......................................................................................................... 3
  2.1 WHAT IS BLUE ECONOMY? .............................................................................. 3
  2.2 THE KEY DRIVERS AND FUTURE TREND OF BLUE ECONOMY .......... 5
    2.2.1 THE KEY DRIVERS AND SECTORS .................................................. 6
    2.2.2 THE FUTURE TREND ........................................................................ 7
  2.3 THE RELEVANT LEGAL AND INSTITUTIONAL FRAMEWORK OF A BLUE ECONOMY ........................................................................................................... 9
  2.4 CHALLENGES TO THE BLUE ECONOMY .................................................. 11
  2.5 BLUE ECONOMY AND SUSTAINABLE DEVELOPMENT GOALS ........... 12
  2.6 BLUE ECONOMY AND SUSTAINABILITY .................................................. 14
  2.7 MECHANISMS FOR THE IMPLEMENTATIONS OF BLUE ECONOMY ...... 15
    2.7.1 INTEGRATED COASTAL ZONE MANAGEMENT (ICZM) .................... 15
    2.7.2 MARINE SPATIAL PLANNING ........................................................... 16
    2.7.3 MARINE PROTECTED AREA ............................................................... 17
  2.8 BRIEF OUTLOOK OF THE NIGERIAN ECONOMY .................................... 18
3 METHODOLOGY AND METHODS ........................................................................ 20
  3.1 NIGERIA INSTITUTIONAL ANALYSIS FRAMEWORK ................................ 20
  3.2 INTERVIEW QUESTIONS .............................................................................. 20
    3.2.1 SAMPLING METHODS AND IMPLEMENTATION .............................. 21
    3.2.2 ETHICS CLEARANCE ...................................................................... 22
    3.2.3 DATA ANALYSIS ............................................................................ 22
  3.3 THEORETICAL APPROACH .......................................................................... 22
4 RESULTS .................................................................................................................. 25
  4.1 REVIEW OF THE INSTITUTIONAL, LEGAL, AND POLICY FRAMEWORKS FOR BLUE ECONOMY ................................................................................. 25
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>The principles of sustainable Blue Economy</td>
<td>14</td>
</tr>
<tr>
<td>Table 2</td>
<td>Key concepts guiding Blue Economy in Nigeria</td>
<td>31</td>
</tr>
<tr>
<td>Table 3</td>
<td>Emplacement of the critical enablers as key to Blue Economy</td>
<td>32</td>
</tr>
<tr>
<td>Table 4</td>
<td>Available potentials for optimization and actualization of Blue Economy</td>
<td>32</td>
</tr>
<tr>
<td>Table 5</td>
<td>Critical Challenges of the Blue Economy agenda in Nigeria</td>
<td>33</td>
</tr>
<tr>
<td>Table 6</td>
<td>Important areas and policy responses for harnessing Blue Economy potentials in Nigeria</td>
<td>34</td>
</tr>
<tr>
<td>Table 7</td>
<td>Blue Economy Sectors and The SDG 14 Targets</td>
<td>62</td>
</tr>
</tbody>
</table>

LIST OF FIGURES

| Figure 1 | Activities of Blue Economy                                                  | 6    |
| Figure 2 | The Blue Economy Mix and Natural capital assets                             | 8    |
| Figure 3 | The DPSIR Framework                                                         | 23   |
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFA</td>
<td>Armed Forces Act</td>
</tr>
<tr>
<td>AIMS</td>
<td>Africa Integrated Maritime Strategy</td>
</tr>
<tr>
<td>AU</td>
<td>African Union</td>
</tr>
<tr>
<td>BBNJ</td>
<td>Marine Biodiversity in Areas Beyond National Jurisdiction</td>
</tr>
<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
</tr>
<tr>
<td>CORER</td>
<td>Centre for Ocean Renewable Energy Resources</td>
</tr>
<tr>
<td>CPA</td>
<td>Criminal Procedure Act</td>
</tr>
<tr>
<td>DOALOS</td>
<td>Division for Ocean Affairs and the Law of the Sea</td>
</tr>
<tr>
<td>DPR</td>
<td>Department of Petroleum Resources</td>
</tr>
<tr>
<td>DPSIR</td>
<td>Driver-Pressure-State-Impact-Response</td>
</tr>
<tr>
<td>DW</td>
<td>Deutsche Welle</td>
</tr>
<tr>
<td>ECOWAS</td>
<td>Economic Community for West African States</td>
</tr>
<tr>
<td>EEA</td>
<td>European Economic Area</td>
</tr>
<tr>
<td>EGASPIN</td>
<td>Environmental Guidelines and Standards for Petroleum Industry in Nigeria</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
</tr>
<tr>
<td>FDF</td>
<td>Federal Department of Fisheries</td>
</tr>
<tr>
<td>FMARD</td>
<td>Federal Ministry of Agriculture and Rural Development</td>
</tr>
<tr>
<td>FMOE</td>
<td>Federal Ministry of Environment</td>
</tr>
<tr>
<td>FMOT</td>
<td>Federal Ministry of Transport</td>
</tr>
<tr>
<td>FMPR</td>
<td>Federal Ministry of Petroleum Resources</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environment Facility</td>
</tr>
<tr>
<td>GEO</td>
<td>Global Environmental Outlook</td>
</tr>
<tr>
<td>GGC</td>
<td>Gulf of Guinea Commission</td>
</tr>
<tr>
<td>IAD</td>
<td>Institutional Analysis and Development (IAD) Framework</td>
</tr>
<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
</tr>
<tr>
<td>ICJ</td>
<td>International Court of Justice</td>
</tr>
<tr>
<td>ICZM</td>
<td>Integrated Coastal Zone Management</td>
</tr>
<tr>
<td>IEA</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>ILBI</td>
<td>International Legally Binding Instrument</td>
</tr>
<tr>
<td>IOC-UNESCO</td>
<td>The Intergovernmental Oceanographic Commission of UNESCO</td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
</tr>
<tr>
<td>ISA</td>
<td>International Seabed Authority</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
</tr>
<tr>
<td>IUU</td>
<td>Illegal, Unregulated And Unreported (IUU) fishing</td>
</tr>
<tr>
<td>JOMALIC</td>
<td>Joint Maritime Labour Industrial Council</td>
</tr>
<tr>
<td>KPMG</td>
<td>Klynveld Peat Marwick Goerdeler (Accounting firm)</td>
</tr>
<tr>
<td>MAN</td>
<td>Maritime Academy of Nigeria</td>
</tr>
<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships</td>
</tr>
<tr>
<td>MDA</td>
<td>Ministries, Departments and Agencies</td>
</tr>
<tr>
<td>MEA</td>
<td>Millennium Ecosystem Assessment</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>MGI</td>
<td>Mckinsey Global Institute</td>
</tr>
<tr>
<td>MOWCA</td>
<td>Maritime organization of West and Central Africa</td>
</tr>
<tr>
<td>MPA</td>
<td>Marine Protected Area</td>
</tr>
<tr>
<td>MSP</td>
<td>Marine Spatial Planning</td>
</tr>
<tr>
<td>MSPP</td>
<td>Marine Spatial Planning Pilot</td>
</tr>
<tr>
<td>NIMASA</td>
<td>Nigerian Maritime Administration and Safety Agency</td>
</tr>
<tr>
<td>NIOMR</td>
<td>Nigeria Institute of Oceanography and Marine Research</td>
</tr>
<tr>
<td>NIWA</td>
<td>National Inland Waterways Authority</td>
</tr>
<tr>
<td>NOSCP</td>
<td>National Oil Spill Contingency Plan</td>
</tr>
<tr>
<td>NOSDRA</td>
<td>National Oil Spill Detection Response Agency</td>
</tr>
<tr>
<td>NPA</td>
<td>Nigerian Port Authority</td>
</tr>
<tr>
<td>NPRC</td>
<td>Nigerian Petroleum Regulatory Commission</td>
</tr>
<tr>
<td>NSC</td>
<td>Nigerian Shippers’ Council</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>OES</td>
<td>Ocean Energy System</td>
</tr>
<tr>
<td>OPRC</td>
<td>Oil Pollution Preparedness, Response and Co-operation</td>
</tr>
<tr>
<td>OTEC</td>
<td>Ocean Thermal Energy Conversion</td>
</tr>
<tr>
<td>PPRA</td>
<td>Petroleum Products Pricing Regulatory Agency</td>
</tr>
<tr>
<td>REC</td>
<td>Research and Ethics Committee</td>
</tr>
<tr>
<td>SAF</td>
<td>System Analysis Framework</td>
</tr>
<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>SEMRU</td>
<td>Socio-Economic Marine Research Unit, Ireland.</td>
</tr>
<tr>
<td>SES</td>
<td>Socio-Ecological Systems</td>
</tr>
<tr>
<td>SIDS</td>
<td>Small Island Developing States</td>
</tr>
<tr>
<td>SPF</td>
<td>Sasakawa Peace Foundation</td>
</tr>
<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>UN-DOALOS</td>
<td>United Nations Division for Ocean Affairs and the Law of the Sea</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>UNEP-WCMC</td>
<td>United Nations Environment Programme World Conservation Monitoring Centre</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>UNFCC</td>
<td>UN Framework Convention on Climate Change</td>
</tr>
<tr>
<td>UNGA</td>
<td>United Nations General Assembly</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wildlife Fund</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

The oceans mean vastness and opportunities to many people in the world. As it already encompasses two-third of earth's surface and the only continuously connected ecosystem, it holds huge opportunities and potentials for human benefits. It is crucial to the sustenance of human existence through regulation of climate temperature, provision of seafood and nutrition for billions of people, and sequestration of 30% of carbon dioxide emission (Koundouri and Giannouli, 2015; FAO, 2014). Coral reefs, an important coastal ecosystem, serve as shield against wave damages and storm surges for our cities (Barbier et al., 2009; UN-DOALOS, 2016). The ocean also provides health benefits as up to 1 to 1.4 million marine species are major sources of drugs and medicines (Costello et al., 2010).

Furthermore, the ocean benefits extends to the network of cities and countries around the globe, thus, facilitating seaborne trade and other economic activities among 38% (and counting) of global population living in coastal and Small Island Developing States (SIDS) (OECD, 2016). The ocean floors facilitate the laying of submarine telecommunication cables- thus supporting 90% of electronic traffic we depend for communication (United Nations, 2016).

Beyond these traditional benefits, dramatic changes are anticipated within the ocean space in the coming decades in light of surging global population, emerging economies and trade, search for alternative energy and rapid technology (Kamanlioglu, 2011; Visbeck et al., 2014). Moreover, anthropogenic activities are significantly impacting the environment and the ocean ecosystems which directly threaten the existence and future economic prospects of a number of countries, including Nigeria (Patil et al., 2016).

Currently, the ocean is under stress from declining biodiversity, overexploitation, pollution and climate change- which complicates realization of ocean potentials for significant benefits (Visbeck et al., 2014; Barbier et al., 2009). Therefore, realizing the
ocean full potentials demands a shift towards sustainable approaches and consideration of the well-being of the ecosystems.

Furthermore, critical to the realization of sustainable growth is the formulation of well-developed integrated ocean policies and strong institutional framework. However, the current milieu in Nigeria reflect sectoral institutions competing for the management of the oceans spaces and various activities. Consequently, this has led to lack of efficiency, poor coastal and marine management and failure of development plans (Economist Intelligence Unit, 2015)

While there is clear understanding on the need for sustainable alternatives in human interactions and economic activities with the environment, there is lack of consensus on the most important and critical factors to achieve the sustainable objective (Park and Kidow, 2014). This research is aimed to fill this gap through bringing together various factors critical for the implementation of Blue Economy policies for Sustainable Development in Nigeria.

To help Nigeria harness its potentials from the ocean and help achieve the Sustainable Development Goals, this research is aimed at achieving the following objectives:

1. To give a balanced description of the concept of Blue Economy and discuss the benefits for its proper integration into the Nigerian Ocean Management framework.
2. To critically review the institutional framework of Blue Economy in Nigeria.
3. To identify the major problems and challenges of the institutional framework and implementation of Blue Economy policy in Nigeria.
4. To analyse and recommend alternative solutions to addressing these challenges and harnessing the ocean potentials.
2 BACKGROUND

2.1 WHAT IS BLUE ECONOMY?


In the briefings paper for the World Ocean Summit (2015), the Economist conceives a ‘Blue Economy’ and a Sustainable Ocean Economy to be similar, which suggests that “Economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy” (Economist Intelligence Unit, 2015, P.7). In an attempt to demonstrate congruence with sustainability principles, the Foods and Agriculture Organization [FAO] (2014) published a document- “Blue growth - unlocking the potential of seas and oceans” in reconciliation of food security with ecosystem services and conservation of marine resources (FAO, 2014).

It is important to note that the Blue Economy concept has been a subject of competing discourses. At the Rio+20 summit, there were popular opinions in the realm of the human-ocean interactions verging on different themes, including: ocean as a source of livelihoods for artisanal fisheries; ocean as “good business”; ocean as a natural asset/capital; and ocean as part of Pacific Small Island Developing States (SIDS) (Silver et al., 2015).

Fernandez-Macho et al. (2016) believe that the main objectives of Blue Economy are full employment level and GDP (Fernandez et al., 2016). Meanwhile, to some Blue Economy is the integration of all maritime activities with focus on Ocean Management
generally and Marine Spatial Planning (MSP) specifically (Luca and Giulio, 2017). Frazao et al. (2014) emphasized that Marine Spatial Planning is the core framework of Ecosystem-Based Management of the Blue Economy. However, Blažauskas et al. (2015) considers the integration of economic activities as the only relevant factor in Blue Economy.

Likewise, some prior research focused on specific maritime activities and their correlation with conservation. To that end, Moore et al. (2016) showed the trade-offs between the efforts to ensure future economic prosperity and the advocacy for Blue Growth Initiatives within the Fisheries sectors (Moore et al., 2016).

Some believes that the Ecosystem concept is the core of Blue Economy. For example, Jobtvogt et al. (2014) agree that in order to guarantee sustainability it is crucial to evaluate the Ecosystem Services especially in complex situations of trade-offs between opportunity cost of Blue Economy and marine protection efforts (Jobtvogt et al., 2014). Jansen et al. (2016) explicitly emphasize the relevance and inclusion of the Ecosystem Services as important factors in Cost-Benefit analysis of Blue Economy in their feasibility study of offshore aquaculture sites in the North Sea.

Recently, Asche et al. (2018) proofed that the three core pillars of sustainability, especially in fisheries management, are in fact not in conflicts or trade-offs. They further stressed the importance of right-based management framework and recommended support for it to attain sustainable development (Asche et al., 2018).

Beyond the scholarly debates over what constitutes the ideal definition of Blue Economy, there are convergence of opinions on key issues which Blue Economy policies and practices must ideally address. Critical to understanding these issues is the report by the World Bank and the United Nations Department of Economic and Social Affair (2017) on the potentials of Blue Economy:

- Blue Economy is applicable in different context and range of economic policies and sectors that ensures the utilization of oceanic resources are sustainable. This sustainability achievement is underpinned by cooperation of states and
partnerships across public-private entities at a transformative and an unprecedented scale.

- Blue Economy also seeks to ensure the socio-economic development and improving the livelihood of people while also considering the sustainability of marine ecosystem and coastal communities. This is in view of the consideration that the ocean resources are limited and the potentials are threatened by unsustainable human activities.

- Blue Economy is broad and has various components. It cuts across the traditional ocean industry- Shipping, fisheries, and maritime transport; and also the emerging and new industries – offshore aquaculture, sea bed extractive activities, bioprospecting and marine biotechnology. Likewise, Blue Economy relates to “non-economic goods and services” which provides life supporting functions to both human and other economic activities such as; coastal protection, waste disposal, carbon sequestration and the existence of biodiversity.

- Blue Economy mix could vary in each country and coastal communities as different circumstances and priorities exists across different locations. However, the core components aim at provision of social and economic benefits for the present and future generation, restoring and protecting the marine ecosystem diversity, functions and values, and reduction of waste through renewable energies and more efficient technologies.

2.2 THE KEY DRIVERS AND FUTURE TREND OF BLUE ECONOMY

Broadly, the core activities the Blue Economy (See Figure 1 below) concepts seek to address critical areas which are divided into four main categories as follows;

1. Harvesting of living resources
2. Extraction of non-living resources
3. Commerce, tourism and trade
4. Non-market / indirect contributions to the economic activities and environment. (OECD, 2016; Economist Intelligence Unit, 2015)
To each of these four categories there are key economic sectors and industries providing unique ocean services. Essentially, all these sectors combined are critical to the broad components of Blue Economy with potentials for more impactful contributions in the future.

**Figure 1 | Activities of Blue Economy**  
(World Bank-UN, 2017)

### 2.2.1 THE KEY DRivers AND SECTORS

Blue economy is driven by many important factors and facilitated through various sectors. Some of the most important drivers and critical sectors are hereunder briefly discussed:

- **Harvesting of living resources**: the essential ocean services provided through this activity is the provision of seafood with the critical sectors relevant to this being the *fisheries and aquaculture industry*, and the provision of marine biotechnology with the active industry being the *pharmaceutical/ chemical industry*.

- **Extraction of non-living resources**: this activity involve four major sectors namely, mineral sand and gravel for *sea bed mining*, the energy sector for *fossil fuel/ oil and gas* exploration, the energy sector for *renewables and clean technologies*, and freshwater for the *desalination* and purification of water resources.
• **Commerce tourism and trade**: essentially, the ocean services relevant involve tourism and recreation with the key sectors being tourism and coastal development, and transport and trade with the active sectors being shipping and port infrastructure and services.

• **Indirect contribution to economic activities and environment**: this involves the non-market based ocean services and the relevant sectors are carbon sequestration through blue carbon, ecosystem habitat protection and restoration, waste disposal for land-based industry through assimilation of land-based effluents and the existence of biodiversity through protection of species habitat.

### 2.2.2 THE FUTURE TREND

Looking into six major sectors within the Blue Economy mix (See Figure 2 below), the projected future trends would be briefly highlighted.

1. **Fisheries and aquaculture**: Amid growing global population, demand for seafood continues to grow. While the landings from captured fisheries gradually decreases, the production from aquaculture is steadily rising. To address the declining fish stock from captured fisheries, addressing issues of overfishing and unsustainable fishing is crucial as this could improve yields by up to 20 percent (MEA 2005; Waite et al. 2014).

2. **Marine biotechnology**: According to the OECD reports (2016), marine biotechnology is significantly growing with projected value of at least US$4.6 billion by 2017 and potentials for more considerable growth in the future as new interests are fostered in nutraceutical and other non-medical uses of marine organisms (OECD, 2016; MEA, 2005).

3. **Seabed mining**: With advancement in technology and need to meet growth demand for polymetallic deposits and other minerals in the ocean floors, the potentials for active engagement in sebed mining would significantly increase in the coming decades. Moreover, it is projected that 10 percent of the global
mineral outputs would come from the ocean based sources by 2030 (UNEP, 2014; OECD, 2016).

4. **Oil and gas exploration**: Interesting reports abound on the significant increase and potentials of offshore oil and gas exploration in the last 30 years. From about 20 percent of energy needs through oil extraction being met from offshore sources in 1980, this has increased to 30 percent by 2014 amid new discoveries being made offshore (OECD, 2016). Likewise, potentials of gas extraction from both deep and shallow waters is projected to rise from 17 million barrels per day in 2014 to about 27 million barrels per day by 2040 (OECD, 2016). The oil and gas industry, generally, is projected to grow with hydrocarbon from offshore sources contributing about 3.5 percent annually to 2030 (IEA, 2014).

5. **Renewable energy**: The offshore wind capacity has developed to more than 7 gigawatts today from almost nothing two decades ago. Moreover, the projection suggests growth of 40-60 megawatts by 2020 and even further by 2050 (OECD, 2016)

6. **Shipping**: The potentials of seaborne trade is ever significant with about 90 percent of global trade in volume carried by ships. Yet, there are projections for more growth as volumes quadruple by 2035 (OECD, 2016).

![Figure 2 | The Blue Economy Mix and Natural capital asset](image) (Patil et al., 2016)
2.3 THE RELEVANT LEGAL AND INSTITUTIONAL FRAMEWORK OF A BLUE ECONOMY

As Blue Economy cuts across various sectors and industries, this presents ample opportunity for naturally instituting an integrated legal and regulatory framework. However, some critical enablers that support an integrated system may be absent due to incoherent policies, weak political will, inefficient enforcement capability, or poor coordination amongst others (Folami, 2017). While these constraints exist, the Blue Economy inherently has potentials to establishing linkages across sectors and catalysing inter-sectoral reforms for filling existing gaps in the institutional and legal frameworks. Moreover, this potentials could be witnessed at global, regional and national levels (Chircop et al., 2016).

Towards the establishment of Blue Economy, it is essential to critically review the existing institutional and legal frameworks in order to identify gaps and assess the overall sectors. Equally important is the constant update of knowledge, developments and adequate awareness of information from the international and regional perspectives on Blue Economy.

Within the confines of international law and the established legal regime for the rights, jurisdictions and responsibility of states parties on issues relating to the peaceful use of oceans, is the United Nations Convention on the Law of the sea (UNCLOS). It was adopted in 1982 but entered into force in 1994 outlining rights and obligations of states in carrying out activities in the oceans and seas (DOALOS, 2010). It answers the critical legal questions on the delineation of maritime zones and the extent of the territorial boundaries of adjoining coastal states. It also highlights other provisions, including- the exploitation of the living resources within the sea column and the exploration of non-living resources within the seafloor, the obligation for the protection and preservation of the marine environment, provisions on the transfer of marine technology, marine scientific research amongst others.

The ocean governance framework established through UNCLOS provides for the cooperation amongst states and the promotion of peace, socio-economic progress and
sustainable development of the oceans and the seas. With a view to addressing arrays of issues, the legal framework within UNCLOS also provides for the adoption of other relevant agreements as complements to the convention. To this end, there were two agreements—firstly, the 1994 Agreement Relating to the implementation of Part XI of the Conventions of the Law of the Sea which relates to the exploitation and exploration of the resources in the international seabed area (Known according to the Convention as “the Area”), considered as the “common heritage of mankind” in section 2, Article 136 (UNCLOS, 1984, p. 70). According to UNCLOS, the regulation of the activities in the Area is vested on the International Seabed Authority (ISA) as an institution with this unique mandate (Zacharias, 2014).

The other important agreement was the 1995 Agreement for the Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (Also called, the United Nations Fish Stock Agreement), which provides for the regional cooperation of parties on the management of fisheries and sustainable exploitation of the resources within the Exclusive Economic Zones (EEZ) and the high seas.

As supplement to UNCLOS, other equally binding international conventions and agreements exists within the broader legal frameworks of ocean governance regimes and conservation of marine ecosystems. Some of these include— the Convention on Biological Diversity (CBD) and Jakarta Mandate; Paris COP 21 Agreement; Convention on Wetlands of International Importance (Ramsar Convention); Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention); International Convention for the Prevention of Pollution from Ships (MARPOL); World Heritage Convention; Africa Convention on the Conservation of Nature and Natural Resources; Africa Maritime Transport Charter amongst others (Folami, 2017). Recently, there is a new development following a resolution of the United Nations General Assembly (UNGA) through Resolution 69/292 of 19 June 2015 which relates to developing an International Legally Binding Instrument (ILBI) under UNCLOS on the conservation and sustainable use of Marine Biodiversity in Areas Beyond National
Jurisdiction (BBNJ) (Konrad, 2017). This is currently a work in progress as state parties are still negotiating the texts based on their national interest analysis and priorities.

The development of legal and institutional frameworks is obviously still an ongoing process. However, there exists sufficient international legal and institutional regimes that allow for the integration of Blue Economy paradigms into existing hard and soft law instruments. This would aid towards the coordination and harmonization of efforts on implementation of Blue Economy plans.

### 2.4 CHALLENGES TO THE BLUE ECONOMY

Generally, some challenges naturally exists in implementation phases of ocean policies due to wrong notions of seeing the oceans and seas as limitless which are compounded by several other challenges facing the planet to meet need food security, energy, employment and economic development (OECD, 2016). Among the broad institutional challenges of Blue Economy are lack of sufficient commitments to the provisions of UNCLOS and other existing legal frameworks, lack of adequate capacities, inefficient governance institutions, inadequate economic incentives, among others (Chircop et al., 2016). These institutional constraints are further accentuated by specific threats from human activities on the oceans and marine ecosystems (Iliya et al., 2017).

While many anthropogenic threats exists, the following are among the most profound in impacting the realization of the goals of Blue Economy:

- Pollution from both land-based sources and marine activities.
- Unsustainable exploitation of resource, for example, unsustainable fishing.
- Destruction and alteration of the marine and coastal habitats from coastal developments activities.
- Climate change impacts, for example; sea-level rise, rising sea temperature, ocean acidity, ocean current dynamics, etc.
- Invasive species.  
  
  *(OECD, 2016)*
Although, many efforts have been made by various stakeholders in addressing some of these challenges, such efforts have mostly been sectoral-based bereft of comprehensive and holistic strategies (Folami, 2017). Focus have been majorly on fisheries governance regimes, reduction of pollution through marine litters efforts and improving port conditions (World Bank-UN, 2017). However, the results from such efforts are mostly undermined by externalities from other sectors which are left out. For example, unregulated sand mining, poor location of port site, aquaculture and tourism could impacts coastal zone management efforts adversely. Likewise, the spawning and feeding habitats for fisheries resources could be impacted from coastal zones management efforts through; habitat conversion, destruction of dune system through sand mining, land reclamation for agriculture or urbanization, etc. (UNEP, 2015; World Bank-UN, 2017).

In view of these, addressing the challenges of Blue Economy must be collaborative, transformative, holistic and sustainable. According to OECD (2016), from the strategic frameworks recently considered in the management of the ocean resources within the Exclusive Economic zones (EEZ) are the consideration of Ecosystem Approach and explicit spatial management techniques. To these ends, such instruments like-Integrated Coastal Zone Management, Marine or Maritime Spatial Planning (MSP) and Marine Protected Areas (MPA) are essential. While some states are at full pace regarding the planning and implementation of these strategic frameworks, some are still struggling with making adequate commitments. However, there is growing belief that Ecosystem Approach is the way forward in the management of ocean resources, including the Blue Growth Initiatives (Patil et al., 2016).

2.5 BLUE ECONOMY AND SUSTAINABLE DEVELOPMENT GOALS

As noted, the Blue Economy concept gained traction following the United Nations Conference on Sustainable Development in 2012. It shares the same ambitious goals derived from the ‘Green economy’ concepts, that is, the improvement of well-being and social equity, and drastically reducing environmental and ecological imbalances (UNCTAD, 2014).
Although, the concept of Blue Economy is a new terminology in the policy debates, the recognition of the relevance and importance of the oceans as critical towards sustainable development generally is not new. At the United Nations Conference on Environment and Development (UNCED) in 1992 and the subsequent 10\textsuperscript{th} and 20\textsuperscript{th} anniversary sessions, it was affirmed that the ocean plays critical roles towards achieving the economic, social and environmental crux of sustainable development. In fact, chapter 17 of the Agenda 21 of UNCED is devoted to “the protection of the ocean, seas and coastal areas, as well as the protection, rational use and development of their living resources” which was reaffirmed with several resolutions, commitments and statements (Cicin-Sain and Knecht, 1995, p. 4).

Recently, the United Nations General Assembly in September 2015 adopted the post-2015 Sustainable Development Goals (SDGs) agenda, which reflects the various aspects of sustainable development, including: “(a) environmental sustainability, productive employment and decent work, and equality; (b) the enablers of development or strategies; (c) strengthened consultations at the conception stage to build ownership and to avoid the perception of a donor-centric agenda; and (d) institutional building and structural transformations” (United Nations, 2016, p. 14).

These SDGs are series of 17 ambitious goals which are all interlinked for the overall development and well-being of humanity. Among these 17 goals is SDG 14, which specifically focuses on the intricate relationships between the oceans and sustainable development explicitly. This SDG 14 brings the ocean to the fore in the policy debates of the development agenda in an unprecedented way. The goal also provides indicators and sub-goals as basis for measuring progress before 2030. While this relationship is very important, It should be noted however, that the Blue Economy concept is not about simple relationship between SDG Goal 14 and Blue Economy. It relates to all the SDGs and highlights frameworks for Blue Economy towards supporting complex interactions in the sustainable utilization of ocean and marine ecosystem.
2.6 BLUE ECONOMY AND SUSTAINABILITY

As the narratives for Blue Economy or Blue Growth Initiatives have surged in the last couple of years, there is increasing concern on the motivation in embracing the Blue Economy concept. While some are truly concerned on the use of ocean resources for sustainable economic development and prosperity. For some, it is erroneously any activity within the maritime industry, whether they are sustainable or not.

To this end, Table 2.1 below briefly highlight the essential ingredients of sustainable Blue Economy as the fact that an activity is ocean-related does not naturally makes it sustainable. According to the WWF Baltic Region (2017), in a small pamphlet titled “the Principle for Sustainable Blue Economy”. This principles are adapted in the table below as guidance for ocean-governance and clear definition of Blue Economy.

<table>
<thead>
<tr>
<th>Table 2.1</th>
<th>THE PRINCIPLES OF SUSTAINABLE BLUE ECONOMY</th>
</tr>
</thead>
</table>
| A SUSTAINABLE BLUE ECONOMY is a marine-based economy that … | • Provides social and economic benefits for current and future generations.  
• Restores, protects and maintains the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems  
• Is based on clean technologies, renewable energy, and circular material flows |
| A SUSTAINABLE BLUE ECONOMY is governed by public and private processes that are … | • Inclusive  
• Well-informed, precautionary and adaptive.  
• Accountable and transparent.  
• Holistic, cross-sectoral and long-term.  
• Innovative and proactive. |
| To create a SUSTAINABLE BLUE ECONOMY, public and private actors must … | • Set clear, measurable, and internally consistent goals and targets for a Sustainable Blue Economy.  
• Assess and communicate their performance on these goals and targets.  
• Create a level economic and legislative playing field that provides the Blue Economy with adequate incentives and rules.  
• Plan, manage and effectively govern the use of marine space and resources, applying inclusive methods and the Ecosystem Approach. |
- Develop and apply standards, guidelines and best practices that support a Sustainable Blue Economy.
- Recognize that the maritime and land-based economies are interlinked and that many of the threats facing marine environments originate on land.
- Actively cooperate in sharing information, knowledge, best practices, lessons learned, perspectives, and ideas, to realize a sustainable and prosperous future for all.

Source: Adapted from WWF Baltic Region (2017)

### 2.7 MECHANISMS FOR THE IMPLEMENTATIONS OF BLUE ECONOMY

Moving on, it is imperative to look into the critical enablers and mechanisms for the effective implementation of Blue Economy. As it is important that the goal of Blue Economy in relations to the sustainable development must be clear, the strategies for its effective and successful implementation must equally be actionable and sustainable.

#### 2.7.1 INTEGRATED COASTAL ZONE MANAGEMENT (ICZM)

The essence of the Integrated Coastal Zone Management is to have an holistic approach to the management of the coastal resources and ensure their sustainability. It defines the broad management interface that extends from the coastal hinterlands areas to the coastal waters and the high seas.

According to FAO (2010), ICZM provides the framework and policy directives towards resource management strategies that avoids conflicting uses of the ecosystem and mitigates negative impacts of human activities on the environment generally. It further provides framework for synergising the efforts of various institutions and agencies with mutual objectives and interests in relations to the marine and coastal management through unique institutional and legal frameworks.

The drives for ICZM responses emanates from the problems of conflicting resource use and activities, resource depletion and natural hazards which damages the good status of the ecosystem. Furthermore, it has become increasingly difficult to isolate planning and management of specific activity in the coastal area (e.g. fishing) without
considering a comprehensive policy for other activities. To this end, the ICZM seeks to provide a long-term sustainable use of coastal resources amid competing activities for the environmental integrity and benefits of the coastal communities.

2.7.2 MARINE SPATIAL PLANNING

There is increasing believes internationally that coastal states can increase their potentials significantly in the management of their ocean resources and the planning of activities through Marine Spatial Planning (MSP) thereto in maritime zones (in their Internal and Territorial Seas, as well as the Continental Shelves and the Exclusive Economic Zones) (Schaefer & Barale, 2011).

According to the IOC-UNESCO guideline, “Marine spatial planning is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process.” (C. Ehler & F. Douvere, 2009, p. 18).

To further accentuate goals and objectives of the MSP process, the Marine Spatial Planning Pilot (MSPP) Consortium report (2006) defined MSP as “An integrated, policy-based approach to the regulation, management and protection of the marine environment, including the allocation of space that addresses the multiple, cumulative and potentially conflicting uses of the sea and thereby facilitates sustainable development” (Patil et al., 2017, p. 30).

MSP, however, reflects various ways of implementation which are informed by different institutional and legal frameworks, as well as the priorities of the coastal states maritime activities. Although, different implementation strategies of the MSP exists among states to accommodate for the diverse realities and administrative procedure of implementation, the essence is usually the same (Jay, 2010). While MSP is an important implementation strategies of Blue Economy, other strategies like; ICZM and Marine Protected Areas (MPA) are equally significant for sustainable development (C. Ehler & F. Douvere, 2009; Agostini et al., 2010).
According to the OECD (2016), around 50 countries in the world currently have some form of spatial planning amongst which eight countries have statutory plans covering 8 per cent of the global EEZs. It is anticipated that by 2025, more plans would be initiated and approved by about 25 countries covering further 25% of the EEZ areas (OECD, 2016).

Furthermore, MSP has become more significant in the managing of the challenges of the use of ocean spaces for traditional activities (e.g. Fishing and Shipping) as well as (emerging activities (e.g. Aquaculture and Offshore Wind Energy), amid conflicting uses. Likewise, the need for effective coordination of these activities and consideration of cumulative effects on the environment informs MSP for sustainable (Jay, 2010).

According to the International Energy Agency (IEA) Ocean Energy System report on MSP (2016), Nigeria does not formally have a marine spatial plan currently. This means implementation of Blue Economy policies needs policy directives on MSP for effective implementation.

2.7.3 MARINE PROTECTED AREA

Following the recent United Nations 17 Sustainable Development Goals (SDGs), there is significant commitment to the oceans sustainability through the SDG 14, (Conserve and sustainably use the oceans, seas and marine resources for sustainable development). According to an important target of the goal (SDG 14.5), it is stated that by 2020, at least, 10 per cent of coastal and marine areas consistent with extant national and international laws, as well as best available scientific data should be conserved and protected. Likewise, the convention on Biological Diversity reflects same targets of conservation and canvasses global efforts for increased representation of MPA (Kenchington and Voyer, 2017).

According to the International Union for Conservation of Nature (IUCN), Protected Area is “A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values” (Korting, 2015, p. 5).
The system of protected area for ecosystem conservation currently covers 3.4 per cent of the global ocean area and 15.4 per cent of world’s land area\(^1\) (UNEP-WCMC, 2018). These areas are significant for supporting livelihoods of people, storing 15 percent of global carbon stock, and reduction of habitat and species loss to deforestation. While there has been significant progress in the numbers and percentage of protected areas globally in recent decades, the extent to which biodiversity and critical habitats are effectively protected and conserved remains challenging and of increasing concern (UNEP-WCMC, 2018).

2.8 BRIEF OUTLOOK OF THE NIGERIAN ECONOMY
Looking into the key areas of the Nigerian economy is critical to understanding the ocean governance frameworks in addressing the sustainable development narratives. According to a report by Mckinsey Global Institute (MGI) (2014), beyond the increasing momentum of the past years growth at more than 8% , Nigeria is set to leading Africa economies and becoming a top-20 economy by 2030. From the drivers of this performance and potentials for the country are the increase in global oil demands amid growing population, digitization, educated and productive youths, and strategic geographical niche in West Africa (Acha et al., 2014).

There are five major sectors in Nigeria with potentials to driving this transformative change in the coming decades, namely: Trade, Agriculture (Including fisheries and Aquaculture), Infrastructure, Manufacturing and Oil-and-Gas.

- **Trade** is projected to more than triple with an annual increase of about 8% accounting for up to $1.4 trillion in 2030.
- **Agriculture**, already the largest sector of the Nigerian economy with 22% of Gross Domestic Product (GDP) has potential to more than double with projected value of about $263 billion by 2030 from $112 billion in 2013.
- **Infrastructure**, while being just 39% of the GDP, the potentials for investment and capital inflows could reach $1.5 trillion by 2030.

\(^1\) https://www.unep-wcmc.org/featured-projects/mapping-the-worlds-special-places
- **Manufacturing**, while performance is currently low, with innovation and increasing productivity, the potential outputs from manufacturing could reach $144 billion by 2030.

- **Oil-and-Gas**, still very crucial to the Nigeria economy, the production capacity could increase to a new high of 3.13 million barrels per day from an average of about 2.35 million barrels (Acha et al., 2014).

Although, these projected trends were threatened by slow growth and depression due to fall in the global oil prices in 2016 which consequently affected performance of many other sectors in the country. With the recovery of the economy from the third quarter of 2017 at 1.4%, the economy is back on track. The catalyst for this recovery could as well be traced to the increase in the global oil price as reflected in the performance of the country’s oil-and-gas industry with growth of 3.8%. Similarly, the volume of trade and the manufacturing sectors have recorded growth of 40.2% and 74.5% from the first quarters of 2017 (NIMASA, 2018).
3 METHODOLOGY AND METHODS

3.1 NIGERIA INSTITUTIONAL ANALYSIS FRAMEWORK
This research addresses analysis of the institutional framework of Blue Economy. As the general regimes of ocean governance establishes the rights and obligations of states as recognized by law, legal and institutional framework are the pivot for effective implementation of policies (Kimball, 2011). Beyond the analysis of these established frameworks, the specific regimes for the management of the resources (living and non-living resources) are articulated. The research investigates further on the institutional arrangement for the management of the marine environment and climate change in Nigeria. And finally, the policies and institutions related to maritime transport and maritime security would be briefly discussed.

3.2 INTERVIEW QUESTIONS
To adequately conduct the research on Blue Economy, detailed information is required from the stakeholders on the specific case of Nigeria. Given the context and the framework guiding this research, qualitative data are utilized to capture the voices and experiences of people to achieve the research objectives. To that end, Semi-Structured interviews were conducted with a view to engaging the views of people passionate about Blue Economy. The interview questions were guided by theories, empirical research efforts and practical implementations of Blue Economy in some countries. This was with a view to broadening the scope of the interview and addressing the key objectives of the research (Rabionet, 2009).

The series of interview questions guiding the semi-structured interviews on Blue Economy include the following:

- What do you understand by Blue Economy concept, generally.
- What is the essence of the Blue Economy concept in Nigeria? What are the relevant factors that are critical to a thriving and Sustainable Blue Economy in Nigeria?
What are the available potentials that could be used towards achieving a sustainable Blue Economy in Nigeria?

What are the institutional and policy challenges to these potentials?

What are other challenges that may be ignored but which are relevant and critical to the Blue Economy goal, in your view?

What is the current situation, in your view, regarding the Blue Economy policies in the country?

What actions must be taken to further harness the potentials of Blue Economy and Sustainable Development within the Nigerian context?

Within the context of these interview questions, however, the issues identified and examined in this research are largely some *a priori* expectations and some interesting emergent themes from respondents novel to the research effort.

### 3.2.1 SAMPLING METHODS AND IMPLEMENTATION

The case study on harnessing the potentials of Blue Economy in Nigeria is a systematic selection of issues which range from the understanding its general meaning among various stakeholders, to identifying the key actions necessary for sustainable development. The sampling strategies is guided by literature and organized within the context of stakeholders from different areas of expertise (Whiting, 2008); but with understanding of ocean economy issues. Sampling strategies is further organized within the context of four identifiers: contributions to Blue Economy narratives in the country, passion and strong interest in the ocean economy development, understanding of the policy frameworks guiding Blue Economy agenda, and finally experience and interests within the Blue Economy and maritime industry, generally (Visbeck et al., 2014). As such, respondents include academia, maritime experts, researchers, journalists and other private entities. Initial contacts with potential interview respondents were made through email to confirm interest then subsequent arrangement of proper interview times. The interviews were conducted through various platforms, like Skype, WhatsApp and some other social media platforms to engage with various stakeholders.
3.2.2 ETHICS CLEARANCE
The interview questions and procedures guiding this research were approved by the Research and Ethics Committee (REC) of the World Maritime University, Malmö in July, 2018. As part of the research guideline, confidentiality agreement/ consent form was signed by the respondents before the interview began. As agreed, the transcripts of the interviews shall be permanently destroyed by the end of the research, according to the confidentiality agreement/ consent form. For confidentiality and data integrity purposes, the identity of the respondents is not disclosed throughout the research. Therefore, each respondent is identified with the numbering system R1, R2, R3, R4,...etc.

3.2.3 DATA ANALYSIS
The interviews were recorded and transcribed using Excel software. The major recurring themes were identified and coded as these are important for unification of concepts within the data collection efforts (Boyatzis, 1998). Some a priori themes were defined drawing on knowledge of Blue Economy from literature and some empirical studies relevant to the research. For instance, initial themes were on the definition of Blue Economy, viz-a-viz sustainability; identification of the critical factors for effective Blue Economy initiatives; the potentials towards sustainable development; critical challenges to these potentials; and important steps towards harnessing these potentials were found very apt for discussion through Driver-Pressure-State-Impact-Response (DPSIR) framework (Svarstad et al., 2008; Tscherning et al., 2012). However, more themes are revealed as additional interview transcripts are analysed to reflect the views of the respondents. As such, the initial themes and sub-themes were further modified, combined and sometimes, replaced to improve the quality of the data analysis. Consequently, new codes naturally evolved to capture new themes outside the a priori expectations.

3.3 THEORETICAL APPROACH
Blue Economy typically involves complex social, economic and environmental nexus of factors which influence policies and practices. The key to understanding these
intricate connections and sifting of facts is to analyse the various issues and connections using a structured problem solving approach. An approach that effectively addresses the integration and simplification of issues in relations to, and in connection with Socio-Ecological Systems (SES) for proper policy salience is the Driver-Pressure-State-Impact-Response (DPSIR) Framework (Svarstad et al., 2008; Tscherning et al., 2012).

Figure 3 | The DPSIR Framework

The utility of the DPSIR framework has been quite extensive in the analysis of predictive human behaviours in connections to their interactions with the environment and collaboration among various stakeholders - Scientists, policy-makers, communities, investors, regulatory authority among others. This DPSIR framework (See Fig. 3 above) has been quite useful in the assessment of ecosystems for Sustainable Development as well as the Global Environmental Outlook (GEO) report of the United Nations Environmental Programme (UNEP) (Ajero et al., 2012).

While the DPSIR framework has been criticized for its oversimplification, superficiality and the overlooking of critical indicators (EEA, 1999; Rapport et al., 1998); it still remains quite relevant and apt for this research analysis due to its robustness, integrating capacity and support of Cost-Benefit Analysis (Bidone and
Furthermore, the DPSIR framework links environmental variables to proper macroeconomic models thus facilitating the goal of sustainable development.

Briefly, the DPSIR framework comprises of five main parts, namely- Driver, Pressure, State, Impact and Response.

- **The Drivers**: This typically reflect the existing socio-economic trends and demography as well as the development overtime and changes to the preferences, conditions, consumption and production patterns.

- **Pressures**: These result from the driving forces. They are essentially about the resulting effects of continuous accumulation of substances on the resources which causes considerable physical and biological changes to the state and conditions overtime. For example, pesticides, effluent from sewage, flow regulations from dams among others.

- **States**: These reflect the adequate physical (e.g. Drought; Temperature; Acid Rain), chemical (e.g. C02 in the atmosphere, P and N concentration), biological (e.g. abundance of phytoplankton or fish, the Ecosystem Biodiversity level) and structural (river morphology) indicators of the pressures concentration on the ecosystem overtime. The changing state could be either positive or negative which indicates the extent of pressure on the environment.

- **Impacts**: These depend on the changing states, whether positive or negative which are identified through various indices of assessing the changes overtime in the state of the normal condition of the ecosystems (For example, biodiversity loss, disaster, loss of nutrients, human-induced climate change, etc.) . They are essentially the consequences of continuous and insistent dynamics in the states of the ecosystem.

- **Responses**: These are the targeted and proportionate reactions to the driving forces and the impacts of the changing states with a view to compensating losses, forestalling, counteracting, conforming and ameliorating the ecosystem conditions.

(EEA, 2003; Gari et al., 2015)
4 RESULTS

4.1 REVIEW OF THE INSTITUTIONAL, LEGAL, AND POLICY FRAMEWORKS FOR BLUE ECONOMY.

The regime for the ocean governance legal, institutional and policy framework highlights the enabling laws and the legions of authorities with mandates on responsibilities. To this end, this section briefly discusses and highlights some of the extant legal and institutional frameworks in the country that are relevant to the ocean economy in general, and maritime industry in particular.

4.1.1 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA (UNCLOS)

Nigeria is a party and a major beneficiary to the UN Convention on the Law of Sea, 1982 with the signing of the legal document on 10 December, 1982 and the ratification of the agreement into law on 14 August, 1986. While Nigeria has been upbeat in ratifying the convention and proactive during the Third conference on the Law of the sea 1973-1982, the legal framework for harnessing full benefits from the provisions and addressing transboundary issues are just recently. Amongst the drive of this development are issues verging on maritime boundary delimitation, agreement on joint development zones, the International Court of Justice (ICJ) judgement implementation, and submission for an extended continental shelf to the Commission on the Limits of the Continental Shelf\(^2\) (Chircop et al., 2016). Besides the treaty entitlement motivation, from other important drivers are the country’s willingness to assert its national interest in offshore oil and gas activity, maritime trade, fisheries, maritime security issues, marine environment protection from oil exploration activities and through the EEZ (Folami, 2017).

As noted by Folami (2017) and Ayoade (2002), the extant national laws of Nigeria reflect the Geneva Convention on the Law of the Sea (1958) through three major

\(^2\) In line with UNCLOS Convention arts. 3, 33, 57, 76 and 303. 200-nautical mile exclusive economic zone (EEZ) and continental shelf which at a minimum is co-extensive with the EEZ and beyond to an outer limit of 350 nautical miles from coastal baselines or 100 nautical miles from the 2500 meter isobaths.
enabling statutes: the Petroleum Act defining the Continental Shelf, the Territorial water Act and the EEZ Act. However, these do not fully benefit from the maritime jurisdictional extent of the Third Conference on the UN Law of the Sea (1973-1982). With a view to harmonizing and claiming full extents of the maritime jurisdictions in accordance with the provisions of the UNCLOS (1982), as noted by Chircop et al. (2016), the country has considered extension of the limits of its continental shelf. To this end, in 2009, an executive bill was drafted by the Federal Ministry of Justice aiming to repeal the extant legislations on the Maritime zones and establishing related jurisdictions in line with international law. In particular, the Senate Bill 240 and House Bill 170 titled ‘A Bill for an Act to Repeal the Exclusive Economic Zone Act Cap. E17 LFN 2004 and the Territorial Waters Act Cap. TS LPN 2004 and Enact the Maritime Zones Act to Provide for the Maritime Zones of Nigeria and for Matters Connected Therewith’ (House/Senate Bill or the Bill) address many of these issues, including amongst others, full compliance with Article 76 of UNCLOS which grants the country the right to claim the entire Continental Margin (Federal Republic of Nigeria, 2009).

4.1.2 INSTITUTIONAL FRAMEWORK FOR THE GOVERNANCE OF THE MARINE LIVING RESOURCES

Although, relevant laws on sedentary species over which states have sovereign rights within the continental shelf is not captured in the extant legislations and institutional framework of Nigeria (Chircop et al., 2016). Nonetheless, the Senate Bill 240 and House Bill 170 when passed into law are anticipated to bridge this gap. However, as a republic with a strong central government, and 36 administrative states, the Federal Government has exclusive jurisdiction on marine fisheries. Whereas, the State Governments have concurrent jurisdiction with the Federal on inland fisheries management. The Federal Government through the Federal Ministry of Agriculture


4 House/Senate Bill (n 12) sections 14(1) and 23.
and Rural Development (FMARD) regulates activities, develops policies and conducts research on marine fisheries resources. In particular, two established agencies within FMARD are mandated to these ends, namely; the Federal Department of Fisheries (FDF) and the Nigeria Institute of Oceanography and Marine Research (NIOMR). They both formulate and implement policies on national, regional and international directives; ensure compliance and conduct research (Folami, 2017). Extant laws on fisheries regulation in the country are: Inland Fisheries Act no. 108 of 1992, Sea Fisheries Act no. 71 of 1992, Sea Fisheries (Licensing) Regulations of 1992 (FAO, 2010).

4.1.3 INSTITUTIONAL FRAMEWORK FOR NON-LIVING RESOURCES
The domain of the non-living resources in Nigeria relates to energy (Ocean Energy and Oil-and-Gas), Solid minerals and Sand mining. With the potentials and attendant risks of oil exploration activities very high and insistent, the enabling laws and institutions are more focused on regulations towards the protection of the marine environment. To this end, the Federal Ministry of Environment (FMOE) and Federal Ministry of Petroleum Resources (FMPR) have developed many regulations and policies addressing offshore Oil-and-Gas exploration activities and marine environment protection. The execution and monitoring of these laws falls within the framework work of other Ministries, Departments and Agencies (MDAs) of government sometimes. For example, the Department of Petroleum Resources (DPR) and the National Oil Spill Detection Response Agency (NOSDRA) are responsible for ensuring compliance with regulations of FMOE and FMPR regarding marine environment protection and as such subjected to the supervision of both ministries (Folami, 2017). Other existing legislations relevant on the Oil-and-Gas regulations are the Petroleum Act 1969 and the Environmental Guidelines and Standards for Petroleum Industry in Nigeria (EGASPIN). A recent development is the passing of the Petroleum Industry Governance Bill at the Senate House of Assembly in May, 2017 seeking to merge the functions of DPR with other bodies; the Petroleum Products Pricing Regulatory Agency (PPRA) and the Petroleum Inspectorate to establish a new regulatory commission, the Nigerian Petroleum Regulatory Commission (NPRC)
The bill is yet to enter into force as it has neither been passed by the House of Representative, the lower house nor assented by the President (KPMG, 2017).

As a party to the Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990 Nigeria has developed the National Oil Spill Contingency Plan (NOSCP) in compliance with international standards and in line with the convention (UNEP, 2011). Albeit, cases of oil spills and environmental degradation are ongoing phenomenon in the country (DW, 2018).

Nigeria is a member of the International Energy Agency (IEA), NIOMR represents Nigeria as a contracting party to the Ocean Energy System (OES), an initiative of the IEA to research feasibility of Ocean Energy and Bio-technology (Folami, 2017). In 2013, NIOMR made a Country Report submission to the OES indicating the research efforts of the country on the feasibility of Ocean Thermal Energy Conversion (OTEC) facilities offshore in the continental shelf of Nigeria (OES, 2013). Progress has equally been made by the NIOMR in drafting policies recommendations on ocean energy and proposed establishment of a new research centre within NIOMR focusing on ocean energy, the Centre for Ocean Renewable Energy Resources (CORER) (Folami, 2017 and OES, 2013).

4.1.4 MARINE ENVIRONMENT PROTECTION AND CLIMATE CHANGE

The responsibilities for the conservation and protection of the environmental integrity, and climate issues in Nigeria is coordinated by the Federal Ministry of Environment. These include the sustainability of both the coastal and the terrestrial habitats, as well as the ecosystem biodiversity within in the country. The work span of the ministry typically addresses issues of erosion, gas flaring, oil spills, coastal zone management, environmental impacts assessment, climate change adaptation and mitigation amongst others (FMOE, 2015). The responsibility for the designation of a Marine Protected Area (MPA) is as well within the mandate of the ministry. Although, Nigeria is a party

---

to the Ramsar convention, and in fact, the FMOE designated 9 new Wetlands of International Importance as at 2008\(^6\) (Ramsar, 2008). However, MPA has not been designated, yet the threats of incessant pollution from oil activities, particularly, in Niger Delta region still thrive (Umana, 2002; DW, 2018). As a member of the UN system, on behalf of Nigeria the FMOE participates and represents the country national interests at various regional and international conferences and programmes; for example, the UN Environmental Programme (UNEP), the UN Framework Convention on Climate Change (UNFCC), and the Convention on Biodiversity (CBD) (Folami, 2017)

4.1.5 INSTITUTIONAL FRAMEWORK FOR MARITIME TRANSPORT
The formulation, coordination and implementation of the National Policy on Maritime Transport is the responsibility of the Federal Ministry of Transport (FMOT) through the Maritime Service Department. The department handles matters relating to the port operations, Inland Waterways, Jetties, Dockyards, International Organizations and oversees the affairs of other MDAs established under the ministry\(^7\) (FMOT, 2018). Examples of such include, the Nigerian Port Authority (NPA); Nigerian Maritime Administration and Safety Agency (NIMASA); National Inland Waterways Authority (NIWA); Nigerian Shippers’ Council (NSC) and Maritime Academy of Nigeria (MAN). Recently, the ministry is as well looking into developing policies on Blue Economy and potentials of deep seabed resources for Sustainable Development (NIMASA Press Release, 2017).

Established through the Nigerian Port Authority (NPA) Act 2004, the NPA has responsibilities for the regulation of activities and enforcement within the port area, planning of port operations, ensuring safety of navigation through dredging of waterways and provision of hydrographic surveys and act in the capacity of a landlord to private port operators (NPA, 2018).

\(^7\) http://transport.gov.ng/index.php/department/maritime-service
The Nigeria Maritime Administration and Safety Agency (NIMASA) is a regulatory agency under the supervision of the Ministry of Transportation established by the Nigerian Maritime Administration and Safety Agency Act, 2007 following the merger of the former National Maritime Authority (NMA) and the Joint Maritime Labour Industrial Council (JOMALIC). NIMASA has mandates to regulate the entire Maritime industry of Nigeria with specific powers deriving from NIMASA Act, 2007; the Coastal and Inland Shipping (Cabotage) Act, 2003; and the Merchant Shipping Act, 2007 and the Regulations pursuant thereto (NIMASA, Nigeria Maritime Industry Forecast, 2018).

4.1.6 MARITIME SECURITY
A major security challenge in the Gulf of Guinea, and Nigeria in particular is the issue of piracy which has raised national, regional and global concern (Brume-Eruagbere, 2017). As the extant legal framework of UNCLOS through Article 100 establishes the obligation of states parties to combat piracy in their waters, the region has initiated strategies to addressing some of these issues (Ali, 2015).

To these end, there are established institutional framework on security cooperation to combat piracy in the region. For example, the Economic Community for West African States (ECOWAS) treaty of 1975, which was later revised in 1992 and elaborated in 1999 provides for the entrenchment of peace and security mechanism in the region (Brume-Eruagbere, 2017; Ali, 2015). Likewise, other regional cooperation in the region through the Maritime Organization of West and Central Africa (MOWCA), Gulf of Guinea Commission (GGC) and the ECOWAS contribute to the security of the region from threats of piracy and armed robbery at sea (Ali, 2015 and Otto, 2014). Nigeria as a member of these regional cooperation and security blocs ensures the coordination of security strategies with other members to effectively respond to maritime security threats (Brume-Eruagbere, 2017).

In Nigeria, the responsibility to protect the territorial integrity of the country and to secure the maritime zone is by the Nigerian Navy through Section 4 of the Armed Forces Act (AFA) CPA A20 LFN 2004 (Brume-Eruaghere, 2017). Also, NIMASA shares some responsibility in Search and Rescue operations, air and coastal
surveillance, patrol operations against piracy and armed robbery at sea, amongst others (NIMASA, 2017).

In sum, the ocean governance regime in Nigeria derives its power from many legal and institutional sources. While many of these institutions functions are strategic, and contribute to the effectiveness of the state in meeting some of its challenges, they are highly sectoral-based and not integrated. These realities create a system of competition, duplication of responsibilities and lack of effective coordination.

4.2 INTERVIEW RESPONDENT SUMMARY

There are 10 respondents that participated in the interviews from diverse areas of interests and knowledge about Blue Economy policies and ocean related issues. Each interview time lasted from between 30 to 60 minutes, and responses were transcribed for further textual analysis. However, some respondents were encouraged to give in written responses to the semi-structured interviews questions for conveniences, if they so wished. While analysing the results, the responses were summarized and grouped on specific themes of the DPSIR framework guiding the discussions. References to respondents in the course of the discussions were made as R1, R2, R3,…etc.

4.2.1 CONCEPTUALIZING BLUE ECONOMY

The table below (Table 2) highlights the common understanding of Blue Economy to various stakeholders. A key observation from the respondents was the convergent of views on two common themes- Diversification of the economy and Sustainable exploitation. While the debate for the definition of Blue Economy is vast and verges on various other issues (Silver et al., 2015), the themes identified capture the key motivations for Blue Economy in Nigeria.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Key concepts guiding Blue Economy in Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key findings/ themes</strong></td>
<td><strong>Comments/Tally</strong></td>
</tr>
<tr>
<td>1. Sustainable Exploitation</td>
<td>3</td>
</tr>
<tr>
<td>2. Diversification of economy</td>
<td>7</td>
</tr>
</tbody>
</table>
4.2.2 THE KEY ESSENCE OF BLUE ECONOMY IN NIGERIA

As a very broad concept, the key essence and elements of Blue Economy in Nigeria is important to understanding the situation and effective strategies of its implementation. The findings as highlighted in Table 4.2 below identified the common themes of institutionalizing Blue Economy thus: Integrated Policy and Institutional Framework, Enlightenment and sensitization, Effective Maritime security, maritime data management and encouragement of investment for critical infrastructures.

<table>
<thead>
<tr>
<th>Key findings/ themes</th>
<th>Comments/Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Integrated Policy and Institutional Framework</td>
<td>7</td>
</tr>
<tr>
<td>2. Enlightenment and Sensitization</td>
<td>4</td>
</tr>
<tr>
<td>3. Effective Maritime Security</td>
<td>6</td>
</tr>
<tr>
<td>4. Maritime data management</td>
<td>5</td>
</tr>
<tr>
<td>5. Investment</td>
<td>3</td>
</tr>
</tbody>
</table>

4.2.3 POTENTIALS OF BLUE ECONOMY IN NIGERIA

The Blue Economy as a framework does not work in a vacuum as there are necessary conditions for its thriving and actualization. In Nigeria, a number of the currently available potentials and resources relevant to Blue Economy are selected from the common theme of analysis of the respondents in the Table 4.3 below. While potentials of Blue Economy is as vast as the ocean, the core issues identified from the inherent potentials in Nigeria are thus: Vast and rich ocean and mineral resources (Fisheries and energy), Marine Transport, Human Capacity (Maritime manpower), Marine Tourism, and Waste Management.

<table>
<thead>
<tr>
<th>Key findings/ themes</th>
<th>Comments/Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vast and rich ocean resources (Fisheries and energy)</td>
<td>7</td>
</tr>
<tr>
<td>2. Marine Transport</td>
<td>5</td>
</tr>
</tbody>
</table>
3. Human capacity (Maritime Manpower) 8
4. Marine Tourism 4
5. Waste Management 3

**4.2.4 CHALLENGES OF BLUE ECONOMY**

The analysis of the interviews respondents highlighted some critical challenges that would constrain the actualization of the available potentials and ultimate implementation of the Blue Economy in Nigeria. The result was revealing as it reflected the common issues on development plans implementation in developing countries, and the specific problems in a Nigerian milieu. In the Table 4.4 below, the respondents identified critical issues that verges on themes such as Knowledge and competence, funding and Finance and investment, compliance issues, local content participation, Maritime security issues, Marine spatial planning, and issues of enabling Act and articulated policies on Blue Economy.

<table>
<thead>
<tr>
<th>Key findings/ themes</th>
<th>Comments/Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knowledge and competence</td>
<td>6</td>
</tr>
<tr>
<td>2. Financing mechanisms</td>
<td>4</td>
</tr>
<tr>
<td>3. Compliance issues- Illegal jetties and pollutions</td>
<td>5</td>
</tr>
<tr>
<td>4. Local content participation- Cabotage</td>
<td>6</td>
</tr>
<tr>
<td>5. Maritime Security issues- Cyber-attack, piracy</td>
<td>7</td>
</tr>
<tr>
<td>6. Marine Spatial Planning</td>
<td>6</td>
</tr>
<tr>
<td>7. Comprehensive and articulated policy framework on Blue Economy</td>
<td>5</td>
</tr>
</tbody>
</table>

**4.2.5 POLICY IMPLICATIONS FOR BLUE ECONOMY IN NIGERIA**

In view of the identified challenges, as it is imperative to consider some policy implications to ensure the effective implementation of the Blue Economy policies and engender development in other sectors of the economy. The respondents identified some important areas and policy responses for the effective implementation of Blue
Economy in the country. In the Table 4.5 below, from the key finding on these are Long-term financing mechanisms, Infrastructure, Policy integration and coordination, Clustering of ocean and maritime activities, strong institutions and political will, strategic partnerships and stakeholders engagements.

### Table 6: Important areas and policy responses for harnessing Blue Economy potentials in Nigeria.

<table>
<thead>
<tr>
<th>Key finding/ themes</th>
<th>Comments/Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Long-term financing mechanism</td>
<td>3</td>
</tr>
<tr>
<td>2. Infrastructure</td>
<td>5</td>
</tr>
<tr>
<td>3. Marine Spatial Planning</td>
<td>6</td>
</tr>
<tr>
<td>4. Policy integration and Coordination</td>
<td>7</td>
</tr>
<tr>
<td>5. Clustering of ocean and maritime activities</td>
<td>6</td>
</tr>
<tr>
<td>6. Strong institutions and political will</td>
<td>6</td>
</tr>
<tr>
<td>7. Strategic partnerships and stakeholders engagements</td>
<td>7</td>
</tr>
</tbody>
</table>
5 DISCUSSION

This research foregrounds the analysis of issues towards harnessing the potentials of Blue Economy in Nigeria. It addresses the core elements by conceptualizing Blue Economy as a balance of economic activities and ecosystem resilience. It as well examined the key drivers and sectors of Blue Economy and the future trends. It further analyses the broad legal and institutional framework, and highlights some critical challenges to Blue Economy, viz-a-viz Sustainability.

From the analysis of the interviews responses, there are a number of issues and themes of further analysis highlighted which are relevant for the effective implementation of Blue Economy policies in the country. These views reflect on the essential issues that would significantly impact Blue Economy institutional and policy frameworks, and critical for the actualization of the sustainable development agenda of the country.

5.1 ISSUES FROM INTERVIEWS RESULTS ON BLUE ECONOMY

5.1.1 DIVERSIFICATION OF THE NIGERIAN ECONOMY

The Nigerian economy is unpinned on a resource-based growth strategies as it still majorly depends on revenue from oil and gas exploration (Suberu et al., 2015). Consequently, the economy is susceptible to the volatility of the global oil prices and underdevelopment of many sectors in the country. Despite abundant human and natural resources, the country continues to struggle with issues of poverty, insecurity, illiteracy amongst others, which compounds the economic challenges (Anyanwu, 1997). This fact was identified by a number of the respondents (R5, R8, R9, and R10) as the critical factor for the consideration of Blue Economy as alternative strategies of diversifying the economy. For example, R2 noted that “The country cannot continue to plan in perpetuity with same outcome of failed development strategies, a transformative approach must be taken earnestly -Blue Economy is a good pathway for sustainable future.” Furthermore, the diversification towards Blue Economy
presents perfect opportunity for meeting the developmental challenges, optimizing the resources and exploring new areas for economic growth, as noted by R_{10}.

### 5.1.2 INTEGRATION AND COORDINATION OF OCEAN ACTIVITIES

According to Cicin-Sain et al. (1998), integration and coordination are critical to attain sustainable development, amid competing uses of ocean, to conserve the ecological integrity, life-supporting functions and biodiversity of the ecosystem. Beyond this, integration is relevant for achieving a better balance of the three core pillars of Sustainable Development Goals—social, economic and environment, and for facilitating cooperation across different agencies, departments and levels of government (Folami, 2017). In essence, integration is the most important factor in moving forward in the Blue Economy agenda of Nigeria. In fact, as noted by R_{1}, a ministry on maritime affairs in the country for the regulation and coordination of all general activities within the ocean space should be seriously considered as the current sectoral approach is lacking coordination. Also, R_{3} observed that integration is the key to the coordination of other legal, institutional and implementation framework of Blue Economy, generally.

### 5.1.3 COMPREHENSIVE POLICY FRAMEWORK

Closely-linked to integration is the development of a comprehensive policy framework for coordinating the various activities in the management of the natural capital and the regulations of the activities, whereby the ocean is recognized as an important space for opportunity and development (Ehler and Douvere, 2007). Such policies also consider the ecosystem integrity and adhere to the sustainable Blue Economy principles, which are to realise the ecological, economic and the social objectives (Patil et al., 2017; Agardy, 2009). These views also align with some comments from the interview respondents who lamented the lack of a comprehensive policy framework for the implementation of the Blue Economy Agenda or the actualization of development plans, generally. Although, R_{2} noted that the Nigerian Ministry of Transport is currently drafting the Blue Economy policy as a guide towards regulating activities, this was contested by other views (R_{4}, R_{3}, and R_{5}) that there is no guiding policy in any
form. To this end, R₄ suggested a comprehensive framework through a Blue Economy Act for effective management and regulation of ocean policies in the country.

5.1.4 DATA MANAGEMENT AND CAPACITY DEVELOPMENT
According to the OECD (2016), data is essential for policy-makers and researchers alike for measuring indicators, assessing performance, and developing policies relevant to management of ocean resources. Furthermore, among the critical issues identified by a number of the interview respondents and related in many literature is the issues of knowledge and competence which are underpinned by relevant data quality and technology (Luca and Giulio, 2017; Patil et al., 2016). These are crucial concerns as management decisions and governance reforms are contingent on key scientific and economic data which are important for understanding the environmental costs of such actions and decisions. As noted by R₃, data management is important for providing the critical information in many ocean and marine sectors, especially for Marine Spatial Planning and fisheries stock assessment data. Moreover, R₉ noted that, management of data is important to better understand the ecosystem goods and services thereby contributing to solving major problems like poverty, food security, capacity development among others. Through these, R₉ argued, political decisions could be swayed and policy-makers supports could be won towards realizing political will for effective implementation of Blue Economy policies.

5.1.5 MARINE ENVIRONMENT PROTECTION
As a core pillar of sustainability, the protection and conservation of the marine environment is crucial throughout the whole implementation process of Blue Economy agenda. While there are many significant threats to the marine environment, the insistent case of oil pollution was identified as the greatest threat in the Nigerian milieu by many of the respondents (R₁, R₂, R₄, R₆, R₇, and R₉). This position is further supported by Rochette (2014), who observed that the weak enforcement capabilities of international regulations and insufficient environmental requirements of many developing countries in regulating offshore oil exploration activities risks cases of oil pollution (OECD, 2016). Other issues identified are the illegal bunkering activities and cottage refineries in the Niger-Delta region of Nigeria which have worsened the
problem of oil spills and pollution in the marine environment from land-based sources, as noted by R₆.

5.1.6 FINANCING BLUE ECONOMY
Blue Economy as a new realm of development, even in the advanced countries, requires lot of resources, capital and commitments. This naturally presents a challenge for developing countries, like Nigeria, although arguably a democratic and thriving developing country. However, it lacks strong institutions and enough financial resources to optimize the Blue Economy potential (Suberu et al., 2015). To this end, some of the respondents (For example, R₈, R₉, and R₅) were concerned about “Long-term financing mechanisms” to guarantee consistent implementation of policies and support for the clusters of industries within the Blue Economy sector. Access to finance is crucial to effectively catalyse the transition of established ocean sectors or allow for the opening up of new sector of development, noted R₅.

5.1.7 MARITIME SECURITY
The challenges of Blue Economy range beyond threats to the ecological integrity of the oceans, they include issues relating to international peace and security, among which are fears emanating from piracy at sea (OECD, 2016). Other major security concern identified by some of the respondent are maritime security threats from cyber-attacks and maritime boundaries disagreements among some states. Although, the latter rarely lead to significant challenge due to a number of options available for states to settle their differences peacefully within the international legal framework, for example Article 279 of UNCLOS and Article 2(3) of the UN Charter on Peaceful settlement of disputes among states. The former, is quite recent and common as digitization becomes more pervasive (OECD, 2016). In Nigeria, however, the core security challenge is the fear of piracy activities in the Gulf of Guinea which has elicited regional and global concern recently, as emphasized by R₁ and R₅.
5.2 INTERPRETING RESULTS OF DPSIR FRAMEWORK

The momentum for Blue Economy lately emanates from various factors. The new focus on the Blue Economy could be due to declining natural resources, or as a result of its many potentials (Patil et al., 2016). While both arguments are relevant to the discussion, the significance of each varies on case-by-case basis.

5.2.1 DRIVERS

The respondents highlighted, the main drivers of this Blue Economy narratives in Nigeria. R1 suggested that the discussion and focus on the Blue Economy in Nigeria is fuelled by “Purely economic motives of the government to diversify”. He argued that despite the relevance of Blue Economy across various aspects of ocean economy, the discussion had been practically focused within the maritime industry.

Further, R2 while downplaying the significance of Blue Economy across all sectors believed that the main drivers of Blue Economy in Nigeria is the diversification of the economy and commitment to the SDGs. R5 had concerns for the whole discussion of Blue Economy in the country and believed that they are quite skewed and unbalanced. He noted that the main drives are “reactive, rather than being proactive to the various issues of development surrounding ocean economy”. Conversely, R8 contends that economy diversification, commitment to international development through treaties and agreements, as well as the SDGs are the main drivers of Blue Economy in Nigeria.

The results highlight the responses from the respondents which to some extent are similar and verge on the same theme. It is important to underline that identifying drivers in marine ecosystem issues is quite complex as some scholars (e.g. Omann et al., 2009) suggested that climate change is the major driver in their analysis, others [e.g. (Maxim et al., 2009)] identified anthropogenic factors as the key drivers. Although, some degree of implementation and drives for Blue Economy in the country is recognized, some respondents (e.g. R5 and R7) argue that the focus had been majorly within the maritime domain. This provides for opportunities as well as challenges for enabling policies and institutions to be in place with a view to meeting the challenges and achieving the strategic objectives- SDGs.
5.2.2 PRESSURE
Understanding the existing pressures on the ocean is crucial to analysing the impacts on the ecosystem. While it is generally acknowledged that amid the growing economic activities within the ocean economy, there are also significant decline in the natural capital induced by human pressure. Moreover, these pressures also contribute indirectly to climate change impacts on the ecosystem. In fact, some researchers (e.g. Atkins et al., 2011) further specified that some category of ‘natural pressures’ are not manageable directly. This is clearly reflected in the views of some respondents (e.g. R₄, R₆ and R₇) who all highlighted that the pressure on the marine environment is steadily rising with resultant decline in the resilience and output of the marine ecosystem. From the major pressures identified in the Nigeria milieu are the insistent cases of pollution during oil and gas exploration with dilapidating consequences on the quality and the state of the marine environment, as noted by R₄.

Other pressures, as identified by R₅, are the destruction of critical ecosystems due to coastal expansion and development plans in some parts of the country. He further remarked, For example, that huge areas of mangroves have been cleared in some coastal areas, thus exposing the environment to coastal inundation and loss of biodiversity the mangroves naturally protect.

R₂ also observed that posing significant pressure are pollution from organic pollutants such as domestic sewage, industrial wastes, farm fertilizers, run-off and other wastes & effluents from factories. Consequently, these decline the amount of dissolved oxygen in the marine environment, thus rendering the survival and existence of aquatic life extremely difficult. To further this claim, R₂ argued that these are not only explicit to the marine environment as they could as well exacerbate the rate of water-borne diseases for humans like Cholera, Typhoid, etc. had already been observed in affected coastal communities.

Another huge pressure highlighted is the insistent cases of gas flaring in the country, as noted by R₆. Although recognized as blatant waste of energy and flagrant violation
of environmental laws in the country by the Ministry of Environment, R₄ argued that it remains a huge threat to the environment and indirect contributor to global warming.

What the foregoing discussion suggest is the increasing pressure due hosts of human activities. While some of these pressures are occasional and accidental; many are insistent and deliberate in flagrant violation of existing environmental laws. Therefore, as noted by Atkins et al., (2011), the manageability of the pressures must be taken into account. Furthermore, proper alignment of policy and enforcement efforts are critical to providing the necessary responses in controlling and limiting the impacts of these pressures.

5.2.3 STATE
Consequent upon the pressure on the ecosystem, the state of the marine environment is clearly reflected based on functions fulfilled by ecosystem elements (Kristensen, 2004). In Nigeria, as noted by R₃, the ecosystem simply exhibit a state of “dysfunction and neglect”. According to R₆, however, with Nigeria being signatory to a number of international conventions and treaties on the conservation and protection of the marine environment, Including UNCLOS, CBD, etc., the current state is not at “irreversible and irreparable damage”. While it is acknowledged that the current state is obviously not the best, it is important to recognise various efforts and institutions working hard to enforce environmental protection in the country, argued R₆. In the same vein, R₈ posited that the states is in fact “moving towards the right direction” as environmental laws are updated and new enforcement institutions are created to combat pollution and protect the integrity of the environment. Hence, the future is bright, he argued.

R₇ observes that the state of the marine environment also reflect the domination of majority of the maritime space for oil & gas concessions. Accordingly, the mechanism for the implementation of the Blue Economy agenda is more challenging as Marine Spatial Planning is important for the realisation of the Blue Economy goals. Likewise, R₉ emphasized that the current state lacks effective enforcement of laws due to many agencies duplicating responsibilities and mandates.
Interestingly however, R_{10} believes that the state of the environment is at a “Re-birth stage” with the new development of the clean-up efforts of the oil polluted region, agreement with aggrieved communities, and the countries commitment to the Africa Integrated Maritime Strategy (AIMS 2050).

The foregoing discussions on the state of the marine environment reflect the general opinion of different experts on the current state of the marine environment in Nigeria. Some obviously have extreme views of “utter neglect”, while some others held the view of “re-birth” and hope. Although, both have reasonable grounds for their claims, it is important to stress the need for more studies and research in these areas as they tend to be very complex beyond sampling of few individuals opinions. Therefore, as suggested by Patricio et al, (2014), it is imperative to have a clear and precise distinction between pressure and state indicators. As this is difficult, it can be surmised that correct and broad view on the state of the environment is contingent on the quality and quality of data available and analysed through further scientific process (Maxim et al., 2009).

5.2.4 IMPACTS
With the pressure and the current state of the environment, there are some impacts which may affect the natural output as well as the future potentials of the ecosystem. They could in a sense be referred to as the ‘environmental noise’ signalling disturbances in the natural ecosystem (Maxim et al., 2009; Patricio et al., 2014). R_{3} observes that the impacts of the pressures and state of the marine environment has affected the livelihood and means of sustenance of most coastal communities, threatened the life of many, and destroyed the existence of some communities. As further noted by R_{3}, these were due to “the pollution of the main source of drinking water- rivers, the depletion of fish stocks in the rivers and wetlands, and the loss of lives of the youths at sea engaging in fishing very far away”.

Conversely, R_{5} believes that the ecosystem is seriously impacted by some activities of local communities through the destruction of the mangroves to engage in illegal “cottage oil refineries” without compliance to the ethical and safety standards. He
further notes that the illegal bunkering activities and the destruction of the pipelines by some aggrieved communities are the major source of oil pollution seriously impacting the area.

R7 observed that another major issue in the country is the impact of invasive species (Hyacinth) displacing the natural ecosystem of mangroves in the habitat. While there are some studies on the existence of invasive species in some regions in the country, the assessment of the threats they pose to the biodiversity and resilience of the entire ecosystem needs more research efforts. To this end, Rs emphasized the significance of climate change through observed sea-level rise, coastal inundation and erosion affecting many coastal communities in the country.

The impacts of the pressure and the current state is hereby nuanced to reflect on various positions and individual opinions. Some of these impacts are purely from direct human activities, for example, the destruction of the mangroves, pollution due to cottage oil refineries and deliberate destruction of oil pipelines (Kristensen, 2004). However, some are not quite direct, like the impacts of human-induced climate change resulting in coastal inundation and sea-level rise, as well as the impacts of invasive species displacing local plants in the habitat. It is important to note that tracing the impacts just as the states is equally among the complex aspects of research. This is because many subtle and critical factors may be unaccounted for. Hence, the foregoing discussion may only reflect the periphery of the core impacts of the current state and pressure on the ecosystem.

5.2.5 RESPONSE
As the global ocean economy exhibits two overarching trend generally- the declining state of health of the marine environment and the increasing number of activities within the ocean economy (OECD, 2016). These two are in parallel and need concerted efforts through adequate policies towards addressing the implications of these imbalances.

Majority of the respondents (R1,R2,R3,R5,R7, and R10) contended that Blue Economy concept indeed has potentials to address the core aspects of the pressure on the
environment. Although, some (R₄, R₆, R₈, and R₉) reluctantly agreed are concerned about the effectiveness of Blue Economy in this regard when the critical aspects of its framework are lacking in Nigeria. This disagreement reflects the scholarly debates on the definition and agreed framework of Blue Economy (Park and Kidow, 2014). Beyond these debates, however, there is a sort of consensus on the need for a broad-based policy to foster economic growth within the ocean sector, while also ensuring that the natural assets continue to provide the necessary ecosystem goods and services critical for human well-being (Patricio et al., 2014).

On this note, Blue Economy, according to R₁, R₅, and R₇, should consider a mix of sector and industry-focused policy responses and initiatives to guide the implementation process and realization of the broad agenda. In particular, efforts should be geared, as observed by R₂, R₃, and R₄, towards sustainability and alignment of environmental health and economic benefits. These mutually-beneficial initiatives should then be supported with incentives to encourage sustainable practices and sanctions to discourage unsustainable behaviours within the ocean economy.

R₃, R₄ and R₁₀ further highlighted the important roles of coastal communities through sensitization and capacity development initiatives on the sustainable exploitation and practices within the ocean economy. However, some (R₆, R₈ and R₉) believed in the importance of investment and infrastructure to support technological and capacity transfer in the implementation process. While both factors are important, more crucial are policies and strategic partnerships to guide the whole process, noted R₆, R₇ and R₁₀.

The foregoing discussions reflect on the general themes by using the DPSIR framework while addressing issues in the implementation of Blue Economy policies and coastal development efforts. The views reflected verges on the clear definition of the Blue Economy framework, a combination of various policy initiatives to incentivise and reprimand at the same time, and engagement of local communities to support the policies.
5.3 INSIGHTS FROM OTHER COUNTRIES

5.3.1 SEYCHELLES
In the African continent, Seychelles- a Small Island Developing (SID) state, has adopted Blue Economy concept as framework for sustainable development within the ocean-based sector\(^8\). In 2018, the Government of Seychelles approved *Seychelles Blue Economy Strategy Framework and Roadmap* as a guide for an improved economic, social and environmental status, as well as commitment to the Sustainable Development Agenda 2030, the Convention on Biological Diversity (CBD) Aichi Target 11, the Paris Agreement on Climate Change (2015), and the 2050 Africa’s Integrated Maritime Strategy (2050 AIMS) (The Common wealth, 2018).

A review of the goals of the Blue Economy project highlights the implementation strategies in establishing and attracting investment into the development of the Government of Seychelles ocean-based economy through an integrated system. However, the Blue Economy Roadmap also seeks to achieve the following: Increase the contribution of the marine sectors’ contribution to the GDP through diversifying the economy, achieve food security, protect environmental and habitat integrity, and share prosperity amongst the people (The Common wealth, 2018).

The effective implementation of these strategic framework and roadmap would achieve the following for the Government of Seychelles:

- Ensure effective control on the management of the ocean resources through integration across various sectors and improved capacity for surveillance and enforcement.
- Ensure effective regional collaboration on the efforts to combat the inherent threats to Blue Economy through mitigating illegal, unregulated and unreported (IUU) fishing; enforcing marine environment protection; and encouraging climate adaptation.

\(^8\) http://thecommonwealth.org/project/seychelles-blue-economy-strategic-roadmap-and-implementation
Achieve greater efficiency on the existing and emerging sectors through improved value-added services, and diversification of investment to various ocean sectors.

- Generate knowledge, research efforts and innovative ideas about the potentials of the Seychelles and specific resource management needs.
- Improve capacity on effective marine resources management and strategies to harness the potentials of Blue Economy for the country.
- Increase predictability or and resilience to environmental and economic imbalances through alternative energy use and ocean-based sources for food and other emerging needs.

(The Common wealth, 2018)

### 5.3.2 SOUTH AFRICA

Following the African Union (AU) summit and the endorsement of the revised *African Union Maritime Transport Charter* (dating from 1994) which culminated with the acceptance of the *2050 Africa’s Integrated Maritime Strategy (2050 AIM Strategy)*, many African countries initiate plans and policies with a view to addressing the maritime challenges of Africa and improving the competitiveness of African countries towards achieving sustainable development (Spamer, 2015).

In a bid to creating more economic opportunities and harnessing the ocean potentials for sustainable development, the South African Government, also launched strategic policy framework on Blue Economy. Code-named “Operation Phakisa” and launched in 2014, “Phakisa” which means “Hurry up” in Sesotho, suggests the passion for speedy and transformative development through the ocean sector. it is the planning and implementation framework for Blue Economy throughout the country (Johan Spamer, 2015). The Department of Environmental Affairs leads the project with special focus and consideration of the environment from the onset. The projects sets ambitious target to create about 1 million jobs within the ocean sector and increase the contributions of the sector to GDP from R54 billion to about R177 billion between 2010 – 2033. While, there are many aspects to Blue Economy, the *Operation Phakisa*
focuses on four major maritime areas: Transport & Manufacturing, Offshore Oil & Gas Sector, Aquaculture, and Marine Protection Services & Ocean Governance (Trudie, 2015). In consonance with other recognized areas of the 2050 Africa’s Integrated Maritime Strategy, two areas were further included, namely Coastal and Marine tourism and Small harbour development (Trudie, 2015).

The specific objectives of these major sectors are highlighted below:

- The transport and manufacturing sector seeks to significantly increase the sector’s contribution to the GDP by improving the storage and warehousing facilities and resuscitation of the ship building, repairs and refurbishment industry.
- The Offshore oil and gas industry seeks to creating the enabling environment for the prospecting and exploration of hydrocarbon by addressing the infrastructural challenges, addressing skills gaps, promoting inclusive economic policies and providing the enabling environment for growth.
- Aquaculture addresses the issues of employment and food security through improving the social and economic status, as well as enhancing the growth in the sector. Thus, improving participation across the country and supporting the transformation agenda.
- Marine Protection Services and Ocean Governance addresses the development of the overarching policies in balancing of the environmental integrity to resource exploitation through instituting frameworks for an integrated ocean governance regime; coordinating programmes for protection and conservation of coastal resources; designation of activities through Marine Spatial Planning initiatives, addressing skill gaps, and implementing platforms for monitoring.

(Spamer, 2015; Trudie, 2015)

5.3.3  IRELAND
The Government of Ireland through an Integrated Marine Plan for the country-Harnessing Our Ocean Wealth (2012) sets the broad vision and goals, as well as the critical enablers for the achievement of a thriving Blue Economy in Ireland. The plan
established clear distinction between the Ocean Economy, economic activity that are inescapably linked to the sea; and the Coastal economy, economic activities in the coastal communities but not connected to the sea, for example Agriculture. Within the ocean economy, however, the plan provided for specific plans for established marine industries and the emerging marine industries.

With a vision to harnessing the potentials of the ocean as critical element in the economic recovery and sustainable growth through targeted and coherent policies, and integrated strategies, the following specific goals were set:

- **Thriving Economy:** To achieve sustainable economic growth on the major marine and maritime sector; improve the economic performance and contributions of the sector to the GDP; and create enabling environment for growth and competitiveness through proper policy and governance framework.

- **Healthy Ecosystem:** To ensure the protection and conservation of the ecosystem and rich marine biodiversity in the country; sustainable use and management of the living and non-living resources in balance with ecosystem; and, compliance with and implementation of policies designed for environmental integrity and sustainability.

- **Engaging with the sea:** Building on the existing maritime heritage, thus strengthening the maritime identity of the country; raising awareness of the values of the seas, the potentials and the social benefits; and, improving the stakeholders engagement and cooperation towards the broad vision.

Further to these goals, there are eight critical enablers identified for aiding the achievement of sustainable development in the Republic of Ireland, they are highlighted below:

1. Governance
2. Maritime Safety, Security and Surveillance
3. Clean-Green-Marine
5. Research Knowledge, Technology and Innovation
6. Capacity, Education, Training and Awareness
7. Infrastructure
8. International/ North and South cooperation.

(Vega and Hynes, 2017).

5.4 CROSSCUTTING THEMES AND RECOMMENDATIONS

The foregoing discussion underscores the importance of systematic review of the existing frameworks critical for the effective implementation, actualization and harnessing the potentials of Blue Economy in Nigeria. It highlights the need to address policy instrument designs and delivery strategies for impactful contributions and ultimate actualization of sustainable development plans. These policy designs would be overlaid by broad-based and robust ocean governance framework through a coordinating unit on ocean and maritime affairs.

In essence, achieving sustainability require a host of activities that sometimes are crosscutting to many areas. Therefore, harnessing the Blue Economy potentials of Nigeria would need consideration of a number of issues, among which are thus-clustering of activities and integration of the ocean governance regime, Ecosystem-based management, building strategic partnerships, securing long-term investment, enabling effective and strong institutions, investing in technologies and human capacity, and finally, data management and spatial planning. The specificities of these crosscutting issues are briefly discussed hereunder.

5.4.1 INTEGRATION AND CLUSTERING OF ACTIVITIES

As the ocean sector continue to expand beyond the established industries of shipping and fishing, it is important to consider the clustering of all relevant activities, especially within the emerging sectors, for effective management and development of policies for their overall development. This clustering effort would achieve, at least, two goals- complementary development of all sectors and coordination of management and policy framework (Visbeck et al., 2014). This was emphasized by a
number of the respondents as the current milieu of ocean and maritime governance in
the country is sectoral-based, conflicting and ineffective.

Furthermore, this integration should align comprehensive management with the
coordination of the human activities while considering the long-term sustainability and
competing uses of the ecosystems goods and services. To this end, it is crucial to
initiate a coordinating framework for the ocean affairs for the effective implementation
of policies and sustainable use of the marine and coastal resources.

5.4.2 STRONG INSTITUTIONS AND POLITICAL WILL
A key theme from the analysis of the institutional framework of the governance
regimes of Nigeria ocean and maritime affairs is the need to strengthen the
effectiveness of the institutions. While consideration of their integration is a key issue
to this end, it is also important to look into compliance level across all sectors and
institution. As observed and lamented, the compliance level to the extant
environmental laws is low and enforcement is ineffective (Chircop et al., 2016). On
this note, equally relevant to the Blue Economy framework is the effective
implementation of the provisions of the United Nations convention on the Law of the
Sea (UNCLOS) which establishes the internationally agreed legal framework for
carrying out activities in the ocean and seas, generally (Visbeck et al., 2014).
Therefore, political will and the strong institutions must be coalesced to effectively
manage and implement the Blue Economy policies in the country in line with all
existing international legal instruments, not just UNCLOS.

5.4.3 ENTRENCHING ECOSYSTEM-BASED MANAGEMENT
The consideration of entrenching Ecosystem-Based Approach in the management of
the ocean resources is as well recognized as very important factor in actualizing the
Blue Economy potentials. Challenging however are the contingent issues relevant to
the approach which are currently lacking or insufficient in the country. The research
identified a number of this issues on this, in particular, Marine Protected Area (MPA)
which is an important Area-based Management framework for the conservation of
biodiversity and preservation of the ocean and marine ecosystem is currently absent in
Nigeria (UNEP, 2015). Moreover, As observed by Jackson et al. (2014), these MPAs are also very important in building the marine ecosystem resilience and providing cost-effective adaptation strategies to climate change. Therefore, the process for the implementation of Blue Economy policies in the country should be well-articulated to include provisions on MPA and other Ecosystem-based management framework.

5.4.4 BUILDING STRATEGIC PARTNERSHIPS

This research also recognize that the effective implementation of the Blue Economy policies is contingent on strong and collaborative supports of many partners and institutions. These fact was identified as crosscutting by a number of the interview respondents because the challenge of implementing, financing, enforcing, and ensuring compliance with policy frameworks cannot be adequately addressed by a single institution, agency or even country. To this end, adequate involvement of all relevant stakeholders and active participation of all important groups must be encouraged. In particular, the private sector through the business community should be given opportunities to be involved in the implementation and the input of various strategies that would encourage competition and inject investment towards economic growth. Furthermore, the knowledge and experiences from local communities and traditional approaches should be adequately harnessed towards achieving the strategic objectives. On issues relating to international concerns like Piracy and dumping at sea, adequate regional collaboration and cooperation should be strengthened for effective control and enforcement efforts.

5.4.5 DATA MANAGEMENT AND SPATIAL PLANNING

This research also notes the recognition of the crucial role of data as a critical underpinning factor in the ocean governance regime and resource management which establishes knowledge on the general features of an ecosystem, its resilience, as well as potentials and conflicts between ocean-base sectors. As noted by Rockström et al. (2009), planning for ocean and planetary boundaries is critical in sustainable management of activities within the environment. Although, this would require more insights and knowledge, noted Visbeck et al., (2014). This knowledge base would then
guide important decision on the efficient management and sustainable use of the ocean and marine resources for various activities. On this note, it is important to underscore the importance of the continuous development of the data quality through a scientific process to assess the environmental costs of various activities on the ecosystem (Ehler and Douvere, 2009). Further to these data management framework, equally important is Marine Spatial Planning which helps in bringing the big picture to view on the management of the ocean space. The spatial planning and mapping of various activities helps avoid conflict and optimize the use of the ocean space among competing users (OECD, 2016). To this end, the implementation framework for Blue Economy in Nigeria should include critical assessment of the data quality and be guided through spatial planning efforts for the actualization of the objectives and optimization of the natural capital.

5.4.6 INVESTING IN TECHNOLOGIES AND CAPACITY DEVELOPMENT

Corollary to the role of data is the importance of technology and capacity development amid the rapidly expanding level of activities in the ocean. This research recognizes that the effectiveness of the Blue Economy framework is underpinned on the leverage of technologies and developing adequate human capacities to better harness the potentials from ocean resources (OECD, 2016). Therefore, investment in these would significantly improve the level of commitment and effectiveness of the policy implementation. Although, already recognized as a constrain by some of the respondents, investment remains a huge challenge. To this end, the country may consider long-term financing mechanisms for Blue Economy from international sources. For example, on the first note, by leveraging the special supportive financial mechanisms for sustainable development and Blue Economy through the World Bank Group, the United Nations Environment Programme, the Global Environment Facility (GEF), and the Food and Agriculture Organization (FAO). However, this would require some governance reforms and existence of other enabling conditions of Blue Economy. On the second note, the country may leverage on innovative financing options like Blue Bond and Debt for Nature swaps as effective strategies to attract investments and solve problems (World Bank-UN, 2017).
5.5 LIMITATIONS

It is acknowledged that this research may be lacking in some aspects as the textual analysis of the results and the use of DPSIR framework as a systematic and simplified tool of analysis to guide the discussion might be inadequate. It is further recognized that the Institutional Analysis and Development (IAD) Framework and the System Analysis Framework (SAF) could as well be used and the issues would have been more broadly-analysed beyond the simple analysis of the DPSIR framework. Further relevant limiting factors are the constraints on time and use of qualitative data. However, the data are collected from broad spectrum and supported by literature as well as various contributions in the field. Nevertheless, it is important to acknowledge and emphasize the need for more inquiry and further research in this regard. To this end, it is hoped that the research reflects the factual and objective positions on many critical issues as expected, and meets the requirement of scientific research, as much as possible.

5.6 CONCLUSION

In view of the objectives of this research, the opportunities that lie in harnessing the potentials of Blue Economy for sustainable development of Nigeria have been demonstrated. The research has made a critical review of the institutional framework of the ocean governance regime and noted the imperative for a more coordinated and integrated system. It further highlighted some specific challenges facing the implementation of Blue Economy generally and even gleaned on insights from some countries.

The research findings revealed the lack of clear vision of the Blue Economy framework for the country towards the Sustainable Development Goals in Nigeria. While it is generally acknowledged that many opportunities exist in the realm of Blue Economy, transforming these potentials to realities through enabling policies and essential elements remain challenging. The result further suggested the need to address many cross-cutting issues including integration and clustering of activities, ensuring
strong institutions and political will, entrenching Ecosystem-Based management, building strategic partnerships, and investing in technologies and capacity development. The huge human capacity potentials must be leveraged to support the Blue Economy policies development process.

In short, it can be surmised that the hallmark of Blue Economy would not only establish pathway for the diversification of the Nigerian economy, as widely anticipated, it could as well help in addressing many socio-economic challenges in the country. Achieving these, however, is contingent upon the establishment and commitment to a comprehensive legal and institutional framework, as well as important enablers for sustainability like the Ecosystem-based management, Marine Spatial Planning and innovative financing mechanism.
REFERENCES


Agardy, T. 2009. “Is Ocean Zoning the Solution to Dying Marine Ecosystems?” Scientific American. [Website article]


EEA 2003: Europe’s water: an indicator-based assessment


Folami, Folami Olalekan. (2017). Towards an integrated ocean governance regime and implementation of the Sustainable Development Goal 14 in Nigeria. World Maritime University MSc. Dissertations.592


KPMG Newsletter (2017). The Petroleum Industry Governance Bill in Nigeria. KPMG.


# Linkages Between Blue Economy and Sustainable Development Goal 14 Targets

## Table 7 | Blue Economy Sectors and the SDG 14 Targets

<table>
<thead>
<tr>
<th>Blue Economy Sector or Activity</th>
<th>Relevant SDG 14 Target (in addition to 14.7)</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fisheries</strong></td>
<td><strong>Target 14.1</strong>  By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution</td>
<td>Improved fisheries management will contribute to a reduction in sea-based pollution from fishing vessels, including in the form of discarded fishing gear, which will help reduce marine debris and ghost fishing</td>
</tr>
<tr>
<td></td>
<td><strong>Target 14.2</strong>  By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans</td>
<td>Improved fisheries management will build resilience of ocean ecosystems as a whole</td>
</tr>
<tr>
<td></td>
<td><strong>Target 14.4</strong>  By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics</td>
<td>Achievement of targets 14.7 and 14.4 depend on each other</td>
</tr>
<tr>
<td></td>
<td><strong>Target 14.6</strong>  By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated</td>
<td>Achievement of targets 14.7 and 14.6 depend on each other</td>
</tr>
</tbody>
</table>
fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation

<table>
<thead>
<tr>
<th>Target 14.9 Provide access for small-scale artisanal fishers to marine resources and markets</th>
<th>Access to markets will allow artisanal fishers to benefit from the Blue Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aquaculture</strong></td>
<td><strong>Target 14.1</strong> Sustainable aquaculture causes minimal pollution and in the case of seaweed and mollusc culture is a net remover of nutrients from the aquatic environment</td>
</tr>
<tr>
<td><strong>Target 14.2</strong></td>
<td>Sustainable, climate-smart aquaculture can help build resilience by increasing incomes and diversifying livelihoods</td>
</tr>
<tr>
<td><strong>Bioprospecting and Biotechnology</strong></td>
<td><strong>Target 14.8 Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular Small Island Developing States and Least Developed Countries</strong></td>
</tr>
<tr>
<td><strong>Target 14.10 Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in</strong></td>
<td>Benefit sharing from the use of marine genetic resources is tied to the implementation of international law, including the Nagoya Protocol for areas under national jurisdiction; discussions are ongoing on a new international legally binding instrument under UNCLOS on the conservation and sustainable use of marine</td>
</tr>
</tbody>
</table>
**Extractive industries**

<table>
<thead>
<tr>
<th><strong>Target 14.2</strong></th>
<th>Deep-sea mining can undermine the resilience of marine ecosystems and species and should thus be preceded by effective social and environmental impact procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 14.8</strong></td>
<td>Capacity building and technology transfer are required for SIDS and developing countries to participate in extractive activities</td>
</tr>
</tbody>
</table>

**Renewable (offshore) Energy**

<table>
<thead>
<tr>
<th><strong>Target 14.2</strong></th>
<th>Ocean energy helps build self-sufficiency and reduce pollution, thus increasing resilience of SIDS and coastal countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 14.8</strong></td>
<td>Capacity building and technology transfer are required for SIDS and developing countries to benefit from ocean energy and other renewables</td>
</tr>
</tbody>
</table>

**Desalination (fresh water generation)**

<table>
<thead>
<tr>
<th><strong>Target 14.1</strong></th>
<th>Desalination technologies may cause pollution in the form of brine and CO2 emissions, which will need to be reduced through appropriate technologies, including renewable sources of energy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 14.2</strong></td>
<td>Desalination, together with water conservation and good water governance, can help build self-sufficiency</td>
</tr>
<tr>
<td><strong>Target 14.8</strong></td>
<td>Desalination plants are expensive; financing, capacity building, and technology transfer are required for SIDS and developing countries</td>
</tr>
</tbody>
</table>

**paragraph 158 of The Future We Want**

biodiversity of areas beyond national jurisdiction.
<table>
<thead>
<tr>
<th>Category</th>
<th>Target 14.1</th>
<th>Target 14.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maritime transport, ports and related services, shipping and shipbuilding</td>
<td>Improved implementation of shipping regulations will reduce sea-based pollution</td>
<td>Improvement in management of ballast water, biofouling, and other transportation-related vectors of invasive species will improve overall resilience of marine and coastal ecosystems</td>
</tr>
<tr>
<td>Coastal development</td>
<td>Coastal development can increase in increased sedimentation and pollution, which will need to be reduced through sustainable operations</td>
<td>Sustainable coastal development and integrating climate change considerations into planning and development can enhance economic, social, and environmental resilience</td>
</tr>
<tr>
<td>Coastal and maritime Tourism</td>
<td>Sustainable tourism reduces marine pollution both from land-based and offshore-based sources</td>
<td>Sustainable tourism can help build ecosystem and human resilience</td>
</tr>
<tr>
<td></td>
<td><strong>Target 14.5</strong> By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information</td>
<td>Sustainable tourism can provide financing for marine protected areas</td>
</tr>
<tr>
<td>Ocean monitoring and surveillance</td>
<td><strong>Target 14.2</strong></td>
<td>Ocean monitoring provides better data for sustainable management and protection</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Target 14.3</strong> Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels</td>
<td>Monitoring ocean acidification is an important component of gaining better scientific understanding about acidification and its impacts</td>
<td></td>
</tr>
<tr>
<td><strong>Target 14.4</strong></td>
<td>Monitoring and surveillance are important components of sustainable fisheries</td>
<td></td>
</tr>
<tr>
<td><strong>Target 14.5</strong></td>
<td>Monitoring and surveillance are important for marine protected area management</td>
<td></td>
</tr>
<tr>
<td><strong>Target 14.8</strong></td>
<td>Capacity building and technology transfer are required for SIDS and developing countries to benefit from ocean surveillance technologies</td>
<td></td>
</tr>
<tr>
<td><strong>Target 14.10</strong></td>
<td>Ocean monitoring and surveillance will assist in implementing international law, including UNCLOS</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coastal and marine area management, protection, and restoration activities</th>
<th><strong>Target 14.2</strong></th>
<th>Coastal and marine area management, protection, and restoration are key components of Target 14.2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 14.3</strong></td>
<td>While there are scientific uncertainties, marine protection may help provide marine ecosystems and species a better chance to adapt to the impacts of ocean acidification</td>
<td></td>
</tr>
<tr>
<td><strong>Target 14.4</strong></td>
<td>IMCAM, MPAs, and restoration activities help achieve more-sustainable fisheries</td>
<td></td>
</tr>
<tr>
<td><strong>Target 14.5</strong></td>
<td>Marine protection will help achieve Target 14.5</td>
<td></td>
</tr>
<tr>
<td><strong>Target 14.10</strong></td>
<td>Implementing IMCAM, MSP, and MPAs is part of a number of existing international agreements; area-based management tools, including MPAs, are also being</td>
<td></td>
</tr>
</tbody>
</table>

66
considered as part of United Nations discussions on an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction

<table>
<thead>
<tr>
<th>Activities supporting carbon sequestration (blue carbon)</th>
<th><strong>Target 14.2</strong></th>
<th>Management of blue carbon ecosystems will not only maintain their capacity to store carbon and provide possible economic benefits, but will also strengthen their resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Target 14.5</strong></td>
<td>Where blue carbon ecosystems are conserved via marine protected areas or other effective means, they would also contribute to achievement of Target 14.5.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waste disposal Management</th>
<th><strong>Target 14.1</strong></th>
<th>Waste disposal management is a key activity for reducing pollution of the coastal and marine environment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Target 14.2</strong></td>
<td>Waste disposal management contributes to sustainable management of marine ecosystems and builds resilience</td>
</tr>
</tbody>
</table>