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Africa Blue Economy Strategies Integrated in Planning to Achieve Sustainable Development at National and Regional Economic Communities (RECs)

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ABSTRACT

The purpose of this article is to map-out African Union Member Countries and Regional Economic Communities engaged in Blue Economy. This engagement would provide some directed actions on how Blue Economy is contributing to achieving Sustainable Development in Africa. The methodology to analyze the Blue Economy data is based on “Sociographic, Type of activities, Intellectual Property focus and Business Model development, Descriptive Statistics, Business Models, Ranking of existing projects by business and innovation readiness”. Additional data obtained from Regional Economic Communities (RECs) and National Blue Economy Strategies and online internet search. The Blue Economy cuts-across several industries, sectors, and thematic areas. This inherently creates complexity when attempting to understand the extent of its socio-economic context in aspiration of development achievement. The effect of human dependence on Blue Economy resources is not always monetary. Some of the people use the resources for artisanal purposes, for exchange and trade, while others utilize it for the recreational and religious benefits associated with the blue natural resources. The well-being of people is a central pillar of the Blue Economy resulting in an immediate need to understand the socioeconomics of the Blue Economy as well as how to measure changes, or progress, associated with it for development achievement. The planning aspect of Blue Economy requires strategic interventions at local, national, and regional levels that spur integration aspects of the Blue Economy into development achievement.

The Blue Economy development achievements require engagement of the stakeholders and elaborate consultations of the African Union Member

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States and Regional Economic Communities. This is because Blue Economy entails the sustainable use and conservation of marine, inland, aquatic, and coastal resources for food security, job creation, and economic growth. It is important therefore to ensure an overall consistency, coherency and synergy and develop bridges and leverage resources between the various implementation plans for strategies including Blue Economy strategies developed by some National and Regional Economic Communities (RECs) in Africa.

KEYWORDS: blue economy; sustainable development; sustainable development goal (SDG-14: life below water); socio-economic; development achievement; regional economic communities/commissions (RECs)

INTRODUCTION

The purpose and objective of this article is to map-out African Union Member Countries and Regional Economic Communities engaged in Blue Economy and determine how the Blue Economy is contributing to the achievement of sustainable development. The article is structured into definition of the Blue Economy, methodology, analysis, results with some concluding remarks on the Blue Economy. The Blue Economy has been defined as a concept that embraces both marine and freshwaters [1,2]. The Blue Economy concept developed primarily out of the green movement which saw the term 'green economy' grow in stature [3]. Thereafter, the Blue Economy concept, picked its adoptive tipping point immediately after the 2012 United Nations Conference on Sustainable Development Rio + 20 [4]. The Blue Economy concept lacks a standard definition across sectors, countries and institutions, several thematic areas, such as sustainability, equity and inter-generational benefit are commonly used in the context of the Blue Economy [3,5–8]. Blue Economy relates to the sustainable use and conservation of oceans, seas, coastlines-banks and shores, lakes, rivers, and groundwater. World Bank/UNECA [9], stipulate that, the Blue Economy Concept comprises activities that are organized in an integrated, fair, and circular manner of the production, distribution, trade and consumption of goods and services resulting from the exploitation of the aquatic resources (fisheries, mining & petroleum, biotechnology, and alternative energies), or from the use of support aquatic environments and ecosystems (marine coastal tourism, maritime transport, seaside activities). These activities contribute to improving health status of aquatic biodiversity and ecosystems by establishing protective and restorative measures. The Blue Economy revolves around socioeconomic and ecosystem sectors [10]. Integrating Blue Economy into development requires measures necessary for effective and efficient planning. Planning is central to national and regional development initiatives that incrementally determine achievement of development.

In general, the Blue Economy spans several of the Sustainable Development Goals (SDGs), and, SDG14-Life Below Water [11], encompasses a broad range of sectors, industries, and stakeholders across the public and private sector, all competing for the use of the same ecosystem [9,11]. To achieve sustainable and equitable use, inter- and multi-disciplinary research and approaches are required for a successful Blue Economy [12]. Seeing as the ocean is a global entity as stipulated by the UN Ocean Conference in Lisbon, Portugal June 28th to 1st July 2022, ocean management, protection and conservation often requires cooperation and collaboration across national and regional economic communities [1,11,13].

Blue Economy is emerging as the “future of development in Africa” posed to play strategic role in key sectors of the economy [13], United Nations [1], World Bank and United Nations [1,9]. Each one of these institutions has provided definitions on Blue Economy that embrace development and sustainability. The World Bank [9] defined Blue Economy as “including a variety of activities ranging from fisheries and aquaculture; and ecosystem services such as carbon sequestration, coastal protection and biodiversity”. In this definition, ecosystem plays a major role in development and more specifically in climate change mitigation, adaptation, resiliency, reticulation, regulation, and moderation through absorption of carbon dioxide (CO₂), coastal habitats such as mangrove forests, sea grass beds sequester carbon and help to protect coastlines, prevent beach and soil erosion from floods and storms.

The Blue Economy cuts-across several industries, sectors, and thematic areas. This inherently creates complexity when attempting to understand the extent of its socio-economic context in aspiration of development achievement. The effect of human dependence on blue resources is not always monetary [14]. Some of the people use the resources for artisanal purposes, for exchange and trade, while others utilize the recreational and religious benefits associated with the blue natural resources. The well-being of people is a central pillar of the Blue Economy resulting in an immediate need to understand the socioeconomics of the Blue Economy as well as how to measure changes, or progress, associated with it for development. The planning aspect of Blue Economy requires strategic interventions that spur integration aspects of the Blue Economy into development.

The strategic interventions support the Blue Economy Strategies that propel the achievement of development inclusive of the social, economic, and ecological components in Africa at both national and regional levels where specific tools are applied. Tools supporting Integrated Land-Use and Water Resources as well as Coastal Zone Management (ICZM) are resource management systems. These tools follow an integrative, holistic approach and an interactive planning process that address the complex management issues in the terrestrial and coastal area. The issues include coordination of policies, programmes and action plans that promote

shared prosperity through the Blue Economy. Interventions include the sustainable use of inland water and marine resources for economic growth, improved livelihoods, jobs creation and ecosystem health (Africa Blue Economy Strategy: <https://www.au-ibar.org/strategy-documents>). More tools are provided by the African Integrated Maritime Strategy (AIMS 2050: <https://au.int/sites/default/files/newsevents/workingdocuments/33832-wd-african-union-3-1.pdf>), and, the Sustainable Development Goals (https://repositorio.cepal.org/bitstream/handle/11362/40156/25/S1801140_en.pdf).

The Blue Economy concept has emerged from the Green Economy concept derived from the Sustainability concept based on the 1972 Stockholm World Conference on Environment and Development [15]. The Green Economy concept pegged on sustainability picked momentum from the Environmental Earth Summit at the Rio + 20 [16,17]. However, the 2000 UN Millennium Development Goals (MDGs) and the 2014 United Nations Sustainable Development Goals (SDGs) do not mention Blue Economy until in the 2022 UN Ocean Conference to Conserve and sustainably use the oceans, seas and marine resources held in Lisbon, Portugal on 28th June to 1st July 2022, focused on Blue Economy under the SDG-14 (Life below water). Among other initiatives emerging, drive and associate Blue Economy and products to include: Blue Growth, Ocean Economy, Ocean Governance, Blue Governance, Blue Carbon, Blue Guardians, Blue Finance, Blue Bonds, and Blue Belt [17]. The Blue Economy underpins economic development and growth with potential and opportunities for achieving sustainable development as anticipated by the AU Agenda 2063 for inclusive sustainable development. The result of this article is that Blue Economy has potential opportunities to adequately drive Africa's growth and development. However, the approach on Blue Economy is still sectoral in approach and requires policy articulation and formulation of programmes and projects that will address issues on creation of jobs, generation of income and reduction of poverty while at the same time promoting conservation, protection, and management of marine ecosystems. In this regard, the study attempts to answer the question that Blue Economy is contributing to the achievement of sustainable development in AU Member Countries, and that the Blue Economy has potential opportunities to accelerate growth and development in Africa. However, the Blue Economy is still very sectoral in approach and requires programmatic discourse to be explored through further research.

METHODOLOGY

Review of Data

The data reviewed in this study is based on the AU Africa Blue Economy Strategy developed in 2019, followed by Regional Economic Communities studies for East African Community [18], Economic Commission for Central African States [19], Common Markets for Eastern and Southern

Africa [20], and The Intergovernmental Authority on Development (IGAD) 5-year Blue Economy strategy [21]; National Blue Economy Strategies for Madagascar [22]; Burkina Faso [23]; Republic of Congo [24]; Somalia [25]; Seychelles [26]; Mozambique [27]; Mauritius [28]; South Africa [29]; and Comoros [30]. Supplementary literature review included working paper on Blue Accounting in the Context of African Union Blue Economy Strategy [31]; and working paper on Coastal and Marine Spatial Planning towards supporting implementation of the African Union Blue Economy Strategy [13]. Additional extensive literature review was conducted online. The 2019 Blue Economy Strategy sampled out 11 countries of the 55 AU-Member Countries. Due to time and financial constraints, it was difficult to visit more countries. The research experts used qualitative techniques through focused group and individual discussions to collect data. The experts for the RECs studies targeted Member States and distributed a questionnaire to collect quantitative data. However, the response rate was very low due to Covid-19 pandemic. The experts for the National studies targeted in country institutions through selected focal points mainly directors of fisheries, aquaculture, environment, climate change and the Blue Economy. Time and resource constraints and Covid-19 pandemic limited physical interactions and most of the interviews were carried out through telephones. The approach was more qualitative and obtaining data for statistical assessment was limited. In this regard, the data obtained was supplemented by secondary data. Overall, the methodology used in this study is in three-fold as follows:

- First, identifying AU Member States and Regional Economic Communities/Commissions (RECs) designing and/or implementing Blue Economy Strategies. This methodology includes: web and internet search.
- Second, collecting data on Blue Economy in AU Member States and RECs. This includes: Online Survey, Sociographic, Type of activities, Intellectual Property focus and Business Model development.
- Third, analysing data on Blue Economy in AU Member States and RECs. This includes: Descriptive Statistics, Business Models, Ranking of existing projects by business and innovation readiness.

On the economic data and module, activities attributed to the Blue Economy are not overstated to ensure that there is no misallocations of economic values. As such, a conservative approach is used to value the Blue Economy. The value added and the Gross Domestic Product (GDP) data are used to calculate the economic dimensions. Applying these data in existence within the AU Member States and RECs, the sample of data assessments are shown in Table 1 below.

Table 1. Economic data and module.

| Data Source | Data Description | Statistics | Data Type |
|-------------------------------|--------------------------------|----------------------|------------------|
| National Bureau of Statistics | Annual National Accounting | Gross Value Added | Economic data |
| National Bureau of Statistics | Formal Employment and Earnings | Wages and Employment | Economic data |

The Gross Domestic Product (GDP) data is published in National Bureau of Statistics (NBS) in its Annual National Accounts (ANA) publications, including all industries that are present in the AU Member States formal economy, and including the International Standard Industrial Classification (ISIC) of all economic activities codes associated with industrial activities. The specific industries and ISIC codes are applied to the Blue Economy valuation estimating the economic dimension of the AU Member States Blue Economy.

The data published in Annual National Accounts is ranked as the highest level of aggregation. This means that the data within the ISIC industry in AU Member States is combined and cannot be broken down to more specific ISIC levels, of which there are four levels. The Table 2: below shows how manufacturing can be disaggregated to ISIC level 2.

Table 2. Disaggregation of manufacturing to ISIC level 2 of economic activity category.

| Levels | International Standards of Industrial Classification |
|---------------|---|
| A | Agriculture, forestry and fishing |
| C | Manufacturing |
| | C10: Manufacture of food products |
| | C11: Manufacture of beverages |
| E | Water supply, sewerage, waste management, and remediation activities |
| F | Construction |
| G | Wholesale and retail trade, repair of motor vehicles and motor cycles |
| H | Transportation and storage |
| I | Accommodation and food service activities |
| K | Financial and insurance activities |
| M | Professional, scientific and technical services |
| N | Administration and support services |
| O | Public administration and defence, compulsory social security |
| P | Education |
| R | Arts, entertainment and recreation |

Consequently, identifying the relevant Blue Economy industries and describing the full value added of each industry from the Annual National Accounts in the Blue Economy Valuation that would result in overstatement of the Blue Economy in AU Member States. As such, more detailed industry information is required to make more accurate estimates of Blue Economy in AU Member States at least to ISIC level standards and or category. Additionally, some industries have input from other industries, implying that the Blue Economy values may not be

accounted for if industry is left out of the data collection, analysis and calculation.

For the work on stocktaking of the institutional frameworks, strategies and policies in AU Member States that enable economic opportunities, investment, and innovation in various Blue Economy sectors, we rely on the existing institutional collaborations. The collaborations are essential to strengthening institutional evidence based for policy reform and implementation; streamlining regulatory requirements and enforcement; creating an inclusive Blue Economy while safeguarding skills and building capacity for the labour force necessary to facilitate access to high-income opportunities; and, addressing barriers and constraints to small business development. The core stocktaking includes the development of a frame with detailed indicators categorized by institutional, policy, program, innovation, and other key performance indicators (link to the development or implementation of a Marine Spatial Planning (MSP) System, a blue accounting mechanism, a Blue Economy Standard scheme, among others. Specific sectorial indicators set-up to record the progress and achievement of traditional and emerging Blue Economy sectors. A special attention is given to the current stage of implementation of Circular Economy as well as a biodiversity and climate change monitoring scheme within Convention on Biodiversity (CBD) and Climate Change Convention Nationally Determined Contributions (NDC) policies. Based on these indicators, we assign numerical value scores either 0 to 5, the highest being countries who have, for example, the policy indicator, a blue economy strategy in place, and the lowest being countries who do not have the strategy. Scores in between could be considered if countries are planning, under development or soon to be finalized.

Mapping AU Member Countries and RECs Implementing Blue Economy

In mapping the 55 AU Member Countries, we recognize that AU Member Countries consist of a coastline of over 30,000 kilometers with composition of tremendous marine ecosystems and natural resources. The oceans, seas, lakes, springs and rivers transverse the continent. The continent is endowed with huge networks of rivers, lakes, floodplains, waterways, and wetlands with massive potential for aquatic biodiversity and socio-economic development. The natural aquatic resources are significant potential opportunities for marine biodiversity, social and economic development [32]. Some of these opportunities include transport, food security, tourism, rural development and increased environmental sustainability, as well as biotechnology, innovative industries and ecosystem services. However, much of which remains untapped and underutilized in most of the AU Member States shown in the political map Figure 1 below.



Figure 1. The political map of Africa (Source: <https://www.nationsonline.org/>).

In Figure 1 above, AU-IBAR with the support of Norway, has supported four National Countries (Madagascar, Burkina Faso, Congo Republic, and Somalia); and three Regional Economic Communities (EAC, EACCAS and COMESA) to develop Blue Economy Strategies. In continuous programming activities, AU-IBAR plans to support and roll-out Blue Economy Strategies in the remaining 51 AU Member States. Although, some of the remaining countries have carried out Blue Economy initiatives, plans and strategies, AU-IBAR will harmonize, synergize, and enhance complementarity in realigning developed initiatives to the AU Africa Blue Economy Strategy.

The maritime zones under Africa's jurisdiction total about 13 million km² including territorial seas and approximately 6.5 million km² of the continental shelf. Thirty nine of the fifty-five African Union Member States are coastal or island States. Africa is also endowed with huge networks of rivers, lakes, floodplains, waterways, and wetlands with massive potential for socio-economic advancement of the continent. There is blue growth potential for increasing seafood production through the expansion of coastal and marine aquaculture, which is essential for sustainable development of the Blue Economy [33]. Some of these opportunities include transport, food security, tourism, rural development and increased environmental sustainability [34], as well as biotechnology, innovative industries, and ecosystem services. However, the resources of the oceans and inland waters are under serious threat and the current associated benefits are being rapidly eroded due to diverse reasons paramount of which include overfishing, pollution from land-based sources, mangrove deforestation, climate change and ocean acidification.

The Blue Economy is being promoted as a concept which encapsulates the development of such resources underpinned by principles of

environmental sustainability, ecosystem management, ecological resilience, social access and justice and transparent governance, to harness the potential of marine and aquatic natural capital. This concept thus seeks to promote inclusive economic growth and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans, coastal areas, inland water, and lakes. The African Blue Economy Strategy (ABES) was developed and endorsed in October 2019 in Addis Ababa, Ethiopia by the African Union Specialized Technical Committee on Agriculture, Rural Development, Water and Environment (STC-ARDWE), and approved by high political meeting by heads of States in February 2020, in Addis Ababa, Ethiopia. The African Blue Economy Strategy [10] is consolidated based on the following five detailed thematic areas considered critical to the Africa Blue Economy growth:

- Fisheries, aquaculture, conservation and sustainable aquatic ecosystems;
- Shipping/transportation, trade, ports, maritime security, safety and enforcement;
- Coastal and maritime tourism, climate change, resilience, environment, infrastructure;
- Sustainable energy and mineral resources and innovative industries; and,
- Policies, institutional and governance, employment, job creation and poverty eradication, innovative financing.

These five thematic areas are essential to development achievement of the Blue Economy in AU Member States. A majority driven by fisheries, aquaculture, conservation and sustainable aquatic ecosystems. Some of the AU Member States driven by shipping/transportation, trade, ports, maritime security, safety and enforcement; and, coastal and maritime tourism, climate change, resilience, environment, infrastructure. While a few of the AU Member States are exploring sustainable energy and mineral resources and innovative industries. However, AU Member States experience bottlenecks and challenges in relation to sound and adequate policies, institutional and governance, employment, job creation and poverty eradication, innovative financing mechanisms [35]. Some of these challenges were highlighted from the November 2018 Nairobi, Kenya Sustainable Blue Economy Conference. The objectives of the conference were in line with the Vision of the AU-IBAR Strategic Plan 2018–2023 and African Union Agenda 2063 both contributing to Africa's integrated, secured, transformation and growth. Therefore, mapping of the Africa Blue Economy contributes to: Identifying whether AU Member States have Blue Economy implementation plans, if any, and bottlenecks where they exist; Identifying technical and capacity gaps, strengths and weaknesses, or, where applicable, prerequisites or interest in establishing Blue Economy investment, development and innovation strategies and

projects; Identifying gaps and challenges (pertaining to policies, institutional frameworks, and capacity on Blue Economy); and, Identifying national and regional institutions that play a critical role in the Blue Economy and sectors driving inclusive economic growth, social prosperity and environment management and protection.

The Blue Economy Mapping requires engagement of the stakeholders and elaborate consultations of the AU Member States and Regional Economic Communities. This is because Blue Economy entails the sustainable use and conservation of marine, inland, aquatic and coastal resources for food security, job creation, and economic growth. It will be important therefore to ensure an overall consistency, coherency and synergy and develop bridges and leverage resources between the various implementation plans for strategies including Blue Economy strategies developed by some Regional Economic Commission such as the InterGovernmental Authority on Development (IGAD).

Mapping of the Blue Economy is the upfront approach of the continent. The approach ensures taking stock of existing Blue Economy investment, innovation and development policies, frameworks and strategies. This takes place at national, sub-regional, regional and continental level in the African Union and AU Member States. Additionally, including those where no such framework exists; and, conducting a review of existing instruments, frameworks or institutions pertaining to the Blue Economy and sectors in AU Member States for initiating actions to harness the potential for sustainable and inclusive development in Africa and to maximize opportunities for a more evolved and effective Blue Economy in Africa.

ANALYSIS

Mapping or stocktaking of Blue Economy initiatives in AU Member States shows in general, a limited Blue Economy activity across the continent that is sectoral in approach and a concentrated spread in a few countries a long coastal area and to some extent to countries with large water bodies inland. The Blue Economy is an increasingly popular concept as a strategy for safeguarding the world's oceans and water resources [36]. The Blue Economy may emerge when economic activity is in balance with the long-term capacity of ocean ecosystems to support the activity in a sustainable manner. The Blue Economy posits the inherent conflicts between growth and development, and protection of ocean resources. The inherent conflicts require solutions to embrace the opportunities associated with the ocean economy while recognizing and addressing its threats. The Table 3 below shows some of the countries and RECs that are participating in development of Blue Economy.

Table 3. AU-Member States and RECs implementing blue economy.

| Countries | Documents |
|--|--|
| Madagascar | National Blue Economy Strategy 25 June 2022; building up on a National Blue Economy strategy prepared on the basis of the Madagascar National Development Plan 2015–2019 that made reference to the Blue |
| Burkina Faso | National Blue Economy Strategy April 2022 |
| Somali | National Blue Economy Strategy March 2022 |
| Congo Republic | National Blue Economy Strategy 28 June 2022 |
| Seychelles | National Blue Economy Strategy: Republic of Seychelles. (2018). Seychelles Blue Economy: Strategic Policy Framework and Roadmap Charting the future (2018–2030) |
| Mozambique | Mozambique Policy and Strategy of the Sea (POLMAR) developed in 2017 to serve many initiatives related to the Blue Economy |
| Mauritius | The Mauritius 3-Year Strategic Plan 2017/18–2019/20 lists the Ocean-based activities as having the potential to boost growth and create wealth. The Ministry of Blue Economy, Marine Resources, Fisheries and Shipping has a Five-year Fishery Development Plan and a National Action Plan to prevent, deter and eliminate illegal, unreported, and unregulated fishing and an aquaculture masterplan |
| South Africa | Ocean economy operation Phakisa-South Africa's Blue Economy Strategy launched in 2014 |
| Comoros | Strategic Framework for a Blue Economy National Policy with focus on: (1) Strengthening of national safety and security; and (2) Enhancing key sectors of Blue Economy with training and creating jobs for the youth; and (3) Protecting coastal, Aquatic, and marine ecosystems with managing the waste; (4) enhancing adaptation of institutional frameworks; and (5) Reorienting pillars of regional integration frameworks |
| Regional Economic Communities (RECs) | Documents |
| East African Community (EAC) | Regional Blue Economy Strategy May 2022 |
| Common Market for Eastern and Southern Africa (COMESA) | Regional Blue Economy Strategy May 2022 |
| Economic Community for Central African States (ECCAS) | Regional Blue Economy Strategy 28 June 2022 |
| Intergovernmental Authority on Development (IGAD) | Regional Blue Economy Strategy (2021–2025) Five Year Plan |
| Southern Africa Development Community (SADC) | Regional Blue Economy Strategy |

The above nine countries indicated in Table 3 above, have visible documents as stated on Blue Economy. Other countries with expressed intentions and policy statements: include Nigeria on enhanced surveillance on Illegal, Unregulated and Unreported (IUU) fishing; Togo on enhanced Maritime Security; Ghana on increased partnerships with African Caribbean to share best practices on Blue Economy; Kenya on establishment of Blue Economy Think Tank within office of the President and policy implementation in the Ministry of Agriculture, Livestock, Fisheries and Cooperatives. Egypt has optimized technology to engage private sector in aquaculture and cage farming, lessons being replicated by East African Countries (Kenya, Uganda, Tanzania); and Southern Africa (South Africa, Zambia, Zimbabwe, eSwatini). Most African countries have

intentions to explore Blue Economy, but, no much evidence is available in policy, plans, programmes or activities.

The Blue Economy initiatives in Seychelles, South Africa, IGAD and SADC are developed and supported by other financial and technical support other than the AU-IBAR. The AU-IBAR in collaboration with Norway supported the other four AU-Member States and three RECs. The support has initiated the process on preparing and domesticating Blue Economy Strategies anticipated to be integrated into National and Regional Planning processes. The integration of Blue Economy into National and Regional Plans establishes a process for budget appropriation and allocation at both national and regional levels [37]. The use of budgetary resources target improvement in social status, institutional transformation and policy change. The Table 4 below shows how integrating Blue Economy can contribute to both economic development achievement and social transformation.

Table 4. Integrating blue economy.

| Full Spectrum Sustainability | Sustainable Objectives | Example of Indicators |
|-------------------------------------|-------------------------------------|--|
| Economic | Sustainable livelihoods | Livelihood index, financial empowerment, ownership |
| | Distribution of access and benefits | Equity, the inclusion of marginalized groups, women, youth and indigenous communities, ownership |
| Social and cultural | Health and Wellbeing | Social factors, social development, quality of life |
| | Sustainable communities | Social capital, social structure |
| | Ethical practices | Rights of people, respect for indigenous practices and traditions |

Source: Adapted from [38].

Blue Economy entered into use and was articulated within competing components regarding human-ocean relations as: oceans as natural capital; oceans as good business; oceans as integral to Pacific Small Island Developing States; and, oceans as small-scale fisheries livelihoods. Blue Economy was consistently invoked to connect oceans with Rio + 20's "green economy" concept. However, different actors worked to further define the Blue Economy in ways that prioritized particular oceans problems, solutions, and participants. It is not clear whether Blue Economy will be understood unilaterally or as knowledge domain of a particular actor or discipline. Blue Economy initiatives are not fully diversifying the existing economic base and increasing the proportion of Gross Domestic Product (GDP) derived from ocean, seas, lakes and rivers sectors.

The current instruments target increasing production in relation to high supply not proportional to demand because of eskewed Blue Economy market. The Blue Economy requires focusing on strategies to create higher value jobs due to escalating unemployment in the continent. The Blue Economy is necessary in addressing the achievement of food security through marine sources of protein; and supporting national and regional institutions (governments, commercial, academic/research, private sector/non-governmental organizations) in managing ocean, seas, lakes, and rivers development in a sustainable way. Some of the insights emerging from the analysis include Technological Concerns; Business Community Concerns, and Community Concerns are prevalent. Within the Blue Economy, each one of these is perceived in isolation impacting directly or indirectly on others. In some areas some tangible actions are realized as innovation in the Blue Economy is trickling in and there is limited experimentation taking place. In this regard, some of the AU Member States have prepared the Blue Economy Framework, Policy and Governance limited to some extent with Community Concerns not being addressed, and Insufficient action taken. Systematically, with the implementation of the AU Africa Blue Economy Strategy, some of the AU Member States are realizing some benefits such as: Economic and Environmental Sustainability, Governance of the Blue Economy, Economic Independence of Operatives in the Blue Economy, and Greater Collaboration among the various participating AU Member States.

DISCUSSIONS

Paradigm Shift of Blue Economy in Africa: Key Drivers of Change

The key goal for Africa's transformation and renaissance is harnessing the potential of Africa's aquatic endowments for Blue Economy growth and development. The AU set as a goal for the attainment of aspiration in the Agenda 2063 promulgating a prosperous Africa based on inclusive growth and sustainable development. The AU Agenda is for the Africa that is inclusive, desirable, and leaving no-one behind. The agenda is supported by other AU instruments that laid the foundation for Blue Economy development at the continental, regional and national levels. Some key instruments include Policy Framework and Reform Strategy for fisheries and aquaculture in Africa; African Integrated Maritime Strategy; and, the 2016 Lomé Charter (<https://au.int/en/treaties/african-charter-maritime-security-and-safety-and-development-africa-lome-charter>). Considering these instruments, the paradigm shift of Blue Economy in Africa is driven for change with results from: African population growth and demand for products and services. The population is growing rapidly. It is estimated to grow to 3 billion people in 2063 driving demand for goods and services upward and will need to be multiplied by a factor of 2.5 [10,31].

The pressure resulting from Regional/International Economic Integration of Blue Economy in development models including Africa Free

Continental Trade Area (AfCTA), Environmental Protection Agency (EPA), Chinese Trade Pacts and other trade agreements occasion the concurrence to ease the move of goods and services within the African continent and with the rest of the world. In this arrangement, the development models at both national and regional levels necessitate derivatives for the paradigm shift of Blue Economy in Africa. African countries, with the exception of Libya, have submitted Nationally Determined Contributions (NDCs), all of which include an adaptation component relevant to Blue Economy resources [36]. Based on these NDCs, the top three priority sectors for adaptation across all African regions are: agriculture; water; and, either health or forestry, land-use, and ecosystems. In this context, Nationally Determined Contributions should be framed as an essential component of the Blue Economy in adaptation and mitigation measures in carbon capture and storage. This requires modeling inclusive of environment and biodiversity protection, and conservation investments that will be increased in the future to contribute to enhancing the carbon sink function of watersheds in Africa at national and regional levels.

The paradigm shift will be a response to Sustainable Blue Energy required for Addressing Energy Demand. To meet the increasing energy demand and achieve Africa Union's 2063 objectives, unlocking the huge untapped potential and integrating sustainable blue energy resources in the national energy mix is essential and inevitable at both national and regional levels. Blue Economy, with a particular focus on which marine industries are included or excluded from different conceptualizations captures drivers of blue energy. Areas of both consensus and conflict in energy and blue energy exploration including from ocean waves and deep sea provide a focus on blue natural resources. In this regard, areas of consensus reflect the growing trend towards commodification and valuation of nature, the designation and delimitation of spatial boundaries in the oceans and increasing securitization of the world's oceans. Areas of conflict exist most notably around a divergence in opinions over the legitimacy of individual sectors as components of the 'Blue Economy' carbon-intensive industries like oil and gas, and the emerging industry of deep seabed mining [37].

The merging of ocean mining for necessary to address Global Demand and National Economic Development contributes to the paradigm shift as well as the deep-seabed mining that is becoming an attractive frontier to meet the growing demand. Extractive activities in the context of Blue Economy are creating innovative Industries for Accelerating Economic Development Benefits that will substantially expedite the creation of prosperous Africa based on advanced technologies. The technologies are getting acquired by large companies and embraced in countries' transport strategies with relevance to the modernization of ports to accommodate the latest generation ships, development of transport infrastructure in the framework of the PIDA project and consultations for the creation by private operators of sub-regional cabotage companies.

Priorities for Achieving Blue Economy Sustainable Development in Africa

African Countries have not fully embraced Blue Economy Strategy. However, some of the countries and RECs with the support of AU, IGAD, EU and World Bank are pursuing Blue Economy activities for growth and development. Therefore, the paradigm shift for Blue Economy needs to be undertaken and integrated in development. The critical components on economic, environmental, ecological, and social dimensions require full integration. On social dimensions, inland local and coastal poor communities in Africa need to be included in Blue Economy strategies and planning [38]. This effort will create and raise awareness hence bridge knowledge and educational gaps and build entrepreneurial capacity at national and regional levels. The paradigm shift will elevate knowledge of communities' property rights over their livelihood dependent on Blue Economy. The approach of inclusivity and leaving no-one behind will provide assurance for countries and regions' ownership and remove the barrier of exclusion from the decision-making process. African countries should prioritize activities that would address efforts to implementing Blue Economy. The effort would contribute to addressing poverty and enhancing inclusivity communities in the process of developing Blue Economy. Inland waterways and coastal communities would have access to economic sector that would positively impact their livelihood. The social dimension of sustainability should be captured adequately by Blue Economy development priorities.

The economic aspect dwells on African countries' institutional abilities to model development that is inclusive of Blue Economy resources. The paradigm shift of Blue Economy activities needs to be reflected in development plans at national and regional levels. Currently, economic data on Blue Economy is available in piece-meal and are collected from different inadequately informed sources. Distorted data are irrelevant, inaccurate, and unreliable to provide a comprehensive understanding and overview of Blue Economy sectors. Inadequate data could fail to capture contribution of Blue Economy to creating added value and jobs. The place and role of the Blue Economy in Africa is in value added of Blue Economy sectors and value of Blue Economy components including and not limited to ecosystems services, education, research, and innovation.

For instance, Blue Economy policies should account for the Nationally Determined Contributions of 'blue carbon', the CO₂ sequestration by mangroves, seagrass beds, mudflats, and other coastal ecosystems. To do so requires establishing specific accounting mechanism as shown in Table 5 below for blue carbon and other ecosystem services that monitor and measure the evolution of the contribution of coastal ecosystems to carbon sequestration necessary for blue growth. The Table 5 below highlights type of activities associated with the services from oceans with linkages to the industry, drivers for growth and identified priorities.

Table 5. Summary of priorities for blue economy achievement in Africa.

| Type of Activity | Ocean Service | Industry | Drivers of Growth | ICZM Priorities |
|--|------------------------------------|--|--|---|
| Harvest of living resources | Seafood | Fisheries Aquaculture | Food Security Demand for Protein | Governance Institution |
| | Marine biotechnology | Pharmaceuticals, chemicals | R&D for healthcare and industry | Technological advancement |
| Extraction of non-living resources, generation of new resources | Minerals | Seabed mining | Demand for minerals | Economic incentives |
| | Energy | Oil and gas Renewables | Demand for alternative energy sources | Economic incentives |
| | Fresh water | Desalination | Demand for fresh water | Economic incentives |
| Commerce and trade in and around the oceans | Transport and trade | Shipping Port infrastructure and services | Growth in seaborne trade; International regulations | Management tools |
| | Tourism and recreation | Tourism Coastal Development | Coastal urbanization Domestic regulations | Management tools |
| Response to ocean health challenges, ecosystem and marine services | Ocean monitoring and surveillance | Technology and R&D | R&D in ocean technologies | Technological advancement |
| | Carbon Sequestration | Blue Carbon | Growth in coastal and ocean protection and conservation activities | Climate Change mitigation adaptation resilience |
| | Coastal Protection | Habitat protection and restoration | Mangrove forests | Management tools |
| | Habitat protection and restoration | Assimilation of nutrients and wastes | Sea grass, coral reefs, sea beds | Management tools |

Source: Adopted from World Bank 2016, <http://www.worldbank.org/oceans>.

Challenges/Bottlenecks for Achieving Blue Economy Sustainable Development in Africa

The AU Member States, in particular with information assessed from Comoros Blue Economy Policy [30], Republic of Madagascar [22], Republic of Somalia [25], Government of Mozambique [27], and Government of Mauritius [28]. experience numerous challenges and bottlenecks

regarding Blue Economy initiatives. Commonly related to Governance, Security, Human and Institutional Capacity, Lack of Awareness, Poor Infrastructure, Laws and Regulations, Inadequate Blue Economy Accounting and Resource Management, Environmental Risks, Lack of Knowledge of Blue potential, and Temporal and Spatial Blue Economy Database and Tools and Micronutrient Deficit. Some specific challenges are as follows:

- Diversity in economic activities of the AU Member States with varying perspectives on the Blue Economy;
- Inadequate information and data on Blue Economy contributing to individuals acting in ignorance of Blue Economy development achievements;
- Lack of Best Practices on Blue Economy and Success Stories for replication in AU Member States;
- Unsustainable Activities driving Blue Economy initiatives in AU Member States;
- Lack of policies, plans, strategies, regulatory frameworks to encourage and motivate private sector participation in the Blue Economy;
- Failure to recognize economic opportunities that being neglected by both governments and private sector organizations;
- Lack of guidance, guidelines and directions resulting in conflict of interests between politicians and technocrats;
- Limited and inaccessibility of Blue Economy in AU Member Countries;
- Lack of a Strategic Framework for the Blue Economy in most AU Member Countries;
- Security and Crime leading to cost escalation in Blue Economy projects;
- Marginalization and Displacement of Coastline Communities;
- Lack of public education interventions on Blue Economy in AU Member Countries;
- Risk aversion to using or innovating the required technologies to develop Blue Economy;
- Limited funding available for innovation to develop Blue Economy in AU Member Countries; and,
- Underdeveloped support services in institutions for technology and business development to promote Blue Economy in AU Member Countries.

Some of these challenges can be addressed through strategic interventions including identified goals. Considering the Blue Economy opportunities and challenges. The strategic goals in which the AU Member States need to implement and ensure their integration in the blue economy program of actions include:

- **Strategic Goal 1:** Establish Functional Blue Economy Governance Framework;
- **Strategic Goal 2:** Accelerate the Exploitation of Blue Economy Sectors and Industries through Innovation, Research and Development, Policy

- Formulation, Stakeholder Engagement;
- **Strategic Goal 3:** Create Social Equity, Environmental Sustainability, and Economic Viability Conditions; and,
 - **Strategic Goal 4:** Identify, Develop and Implement Blue Economy Priority Program of Actions to Address National Economic, Social and Environmental Challenges [10].

The strategic intervention, objectives and goals will help to address the challenges and effectively implement the program of actions by identifying their respective projects. For every Blue Economy industry or sector, strategic goals are identified, of which the strategic intervention objectives are proposed as guiding objectives to further develop a respective program of actions or project activities [39]. The national Blue Economy strategy outlines detailed roles and responsibilities of responsible institutions, provides details of sectoral policy available, and an organizational structure of the Blue Economy. Though the implementing institutions are responsible for implementing their respective intervention objectives, as the Blue Economy is multidisciplinary in nature, it shall require coordination and facilitation as per the provided organizational structure in Figure 2 below.

Benefits and Gains from Achieving Blue Economy Sustainable Development in Africa

Sustainable Blue Economy Development has potential opportunities to generate benefits and gains for AU Member States. Some of these are as follows:

- Building institutional capacity in order to enhance ability necessary to acquire tools and assets required to solve identified Blue Economy problems in AU Member States;
- Seeking innovative solutions to creating a more sustainable environment and economy [40];
- Supporting mechanisms for effective and efficient use of marine and natural resources;
- Developing a self-Sustaining Blue Economy;
- Attracting support from financial institutions for developing the Blue Economy in AU Member States;
- Creating opportunities for Blue Jobs and creation of opportunities for youth entrepreneurs;
- Enhancing increased visibility of the Blue Economy through national and regional decision-making mechanisms; and,
- Promoting mechanisms for knowledge transfer at national and regional levels to institutions, people and businesses operating in the Blue Economy in AU Member Countries.

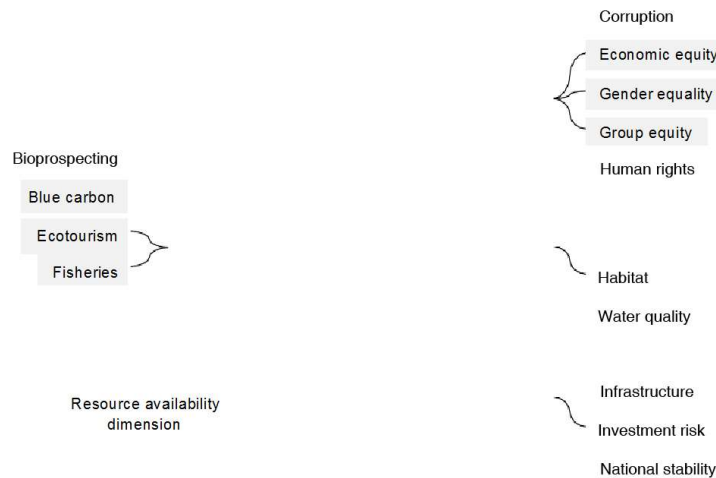


Figure 2. Enabling conditions for an equitable, sustainable blue economy [40].

The Blue Economy sustainability enabling conditions should apply to any Blue Economy sector so as the Blue Economy resources are used in a sustainable manner throughout the Blue Economy value chain shown in Figure 2 above [40]. Thus, to successfully implement the Blue Economy Strategy, the challenges need to be addressed, and an enabling environment is created.

NATIONAL AND RECS CASE STUDIES

National Blue Economy Strategies

African countries are at critical juncture of their development trajectories [5]. African countries experience development challenges confronted by poverty and unemployment [41]. The natural resource, marine resources and ecosystem services contributing to productive economic sectors are experiencing pressure and threats to sustainable development. The threats span from marine pollution, environmental degradation including deforestation, soil and beach erosion, desertification, loss of biodiversity, depletion of fish stocks and effects of climate change. At the same time these challenges present potential opportunities for development, economic growth, institutional change, and transformation. For example, fisheries directly and indirectly support local communities and international trade through fishing, fish farming, fish processing and fish trading for their livelihoods [33]. Despite challenges from depleting fish stocks related to overfishing, marine pollution and deforestation of mangroves and lagoons and ecosystems providing breeding grounds and habitat for fish. On tangible impacts, which is related mostly to poor environmental governance and the failures of the market economy to value the costs of degradation have contributed to problems such as: deforestation; sedimentation of rivers and lakes; eutrophication; habitat loss; decreasing biodiversity;

overfishing; pollution from maritime and riparian transport; and dumping of toxic waste [21,34]. The Blue Economy Strategy is critical in supporting policy actions and investment plans. The Blue Economy Strategy comprises of the establishment of Marine Protected Areas (MPAs), raising awareness of consumers through eco-labeling, removal of subsidies for fisheries, habitat restoration [42], implementing Marine Control Surveillance Systems (MCSs) to curb Illegal, Unregulated and Unreported fishing (IUU), introduction of market-based policy instruments, effective cooperation among different countries to manage trans-boundary fisheries, and elimination of illegal, unreported and unregulated fishing. The Blue Economy Strategy efforts to improve phyto-sanitary standards and processing can lead to long-term sustainability and improved terms of trade [43]. To rip the benefits, the Blue Economy Strategy is regarded as a blueprint for guiding on the implementation of the Blue Economy related resources including fisheries, aquaculture, conservation, and sustainable aquatic ecosystems, maritime, marine energy, extractive minerals, oil, and gas, and innovative industries and environmental sustainability, climate change, coastal infrastructure, and tourism [12,13]. In addition, governance, institutions, and social actions are regarded as an enabling environment for successfully implementing the Blue Economy Strategy. However, these benefits are at risk, as the exploitation of natural fish stocks is reaching its maximum and aquaculture production has fallen short of achieving its potential. The Table 6: below provides some details on available instruments and their sources on how some of the risks can be handled, managed, avoided, reduced and or mitigated.

Table 6. Instruments supporting national blue economy strategies in Africa.

| Number | National Blue Economy Instruments | Database Sources |
|---------------|---|---|
| 1 | Extending the area under sustainable land and water management | Comprehensive Africa Agriculture Development Programme (CAADP), which is an African Union Commission New Partnership for Africa's Development (AUC-NEPAD) agency led framework for transforming African agriculture |
| 2 | Improving market access through improved rural infrastructure and trade-related interventions | African Development Bank |
| 3 | Increasing food supply and reducing hunger | UN-FAO (United Nations Food and Agricultural Organization) |
| 4 | Improving agricultural research and systems to disseminate appropriate new technologies | UN-FAO (United Nations Food and Agricultural Organization) |

The Republic of Somalia is endowed with vast “Blue Economy” potential that could be used as an engine for economic transformation.

The country has a 3333-kilometer coastline, which is the largest in mainland Africa, three permanent rivers (Juba, Shabelle, and Dhawo) of 4784 kilometers in length, and four major ports, eleven jetty ports and sixty-two natural fish landing sites [25]. The country has 72,789.37 km² exclusive economic zones (EEZ), 604 fish species, 420 commercial fish species, with an annual economic value of \$135 million [25]. Somalia is one of the few African countries recognized with the value of its Blue Economy for national economic development and is one of the five African countries (Nigeria, Kenya, South Africa, Madagascar, and Somalia) dubbed as the 'new frontier of African renaissance', poised to benefit from Blue Economy economic activities.

Burkina Faso being a landlocked country, misses out on the Blue Economy resources linked to marine. Hence limited in the development of the national strategy of Blue Economy. The seas and oceans being the main recipients of the resources of the Blue Economy. However, Burkina Faso is watered by rivers, lakes, and basins, hence the possibility of developing aquatic resources (fishing, aquaculture, etc.), as well as the exercise of certain other activities of the Blue Economy such as tourism at the riverbanks and the exploitation of energy at the level of dams, lakes and other waterways. Coastal (South Africa, Kenya, Tanzania, Somalia, Mozambique, Namibia, Angola, Gabon, Congo, Liberia, Sierra Leone, Ghana, Ivory Coast, Cameroon, Nigeria, Mauritania, Morocco, Tunisia, Algeria, Libya, Egypt, Eritrea and Djibouti) and Islands (Seychelles, Mauritius, Comoros, Madagascar, Cape Verde, Sao Tome & Principe) have more opportunities in the field of the Blue Economy. However, there are potential opportunities for Blue Economy exploitation in inland countries (Burkina Faso, Mali, Niger, Tchad, Central African Republic, Democratic Republic of Congo, Rwanda, Brundi, Uganda, Ethiopia, Sudan, South Sudan, Malawi, Zambia, Botswana and Zimbabwe).

RECs Blue Economy Strategies

The EAC-REC comprises of Tanzania, Kenya, Uganda, Rwanda, Burundi, and South Sudan. These countries are endowed with water bodies, including lakes, rivers, and underground water, in addition to the coast and marine of Kenya and Tanzania and Lake Victoria, Lake Tanganyika and Blue Nile River with unique potential opportunities and resources for economic exploitation. The largest sectors of the current EAC REC aquatic and Blue Economy are fisheries, aquaculture, tourism, transport, ports, coastal mining, and energy. The EAC REC Blue Economy exhibits interconnectedness with other economic sectors, is responsive to emerging and frontier sectors, and with opportunities to support important social components, such as gender (women and youth) mainstreaming, food and water security, poverty alleviation, wealth retention, and jobs creation. Hence, the EAC-REC Blue Economy can play important role in the region's structural transformation [13]. The EAC-REC region Blue Economy will contribute to sustainable use, management and conservation of aquatic

and marine ecosystems and associated resources. It will build on principles of equity, low carbon footprint, resource efficiency, social inclusion and broad-based development, with the jobs agenda at the centre of it all. It will be anchored on strong regional cooperation and integration, considering structural transformation as an imperative for EAC-REC's development. The Table 7 below shows how the EAC-REC Blue Economy strategy will establish linkages to other sectors of the regional economy, it will locate the aquatic and marine economies as part of integrated ecosystem services based on the harvesting of living and non-living resources, benefitting both coastal, inland and landlocked countries. The Technical Assistance for the Development of EAC-REC Regional Blue Economy Strategy support contains the following Regional Economic Components shown below in Table 7.

Table 7. Economic components for blue economy achievements in EAC-REC.

| Number | Basic Elements of the EAC Regional Blue Economy Strategy |
|---------------|--|
| 1 | Marine, Lakes and Rivers fisheries, aquaculture, conservation and sustainable aquatic Ecosystems and Wetlands |
| 2 | Waterways shipment/transportation, circular economy, trade, ports, maritime, lakes and rivers security, safety and enforcement |
| 3 | Coastal, maritime and inland water tourism, social sustainability, climate change, resilience, environment, infrastructure |
| 4 | Sustainable energy and mineral resources and innovative green industries |
| 5 | Governance, Empowerment and inclusive decision-making for: Effective and Efficient Regional polices, institutional and governance, women and youth inclusivity, employment, job creation and poverty eradication, innovative financing |

The technical assistance helps the EAC REC towards the formulation of its Regional Blue Economy Strategy, implementation plan and corresponding framework for setting up Blue Governance Mechanism for effective and efficient coordination. Thus, recognizes that the development of the strategy includes implementation plan and framework for Blue Governance Coordination. As AU Africa Blue Economy Strategy has established and developed a continental level implementation plan and Blue Economy governance coordination framework, specific clarity at regional level is required on policy change and institutional reform necessary to strengthen capacity and cooperation mechanisms. This will expedite the implementation of the African Blue Economy Strategy and implementation plan so that EAC REC could take actions to harness the potential for sustainable and inclusive development and maximize opportunities for a more evolved and effective Blue Economy in Africa. As such, achievement of the sustainable Blue Economy in EAC-REC is multidisciplinary and cross-cutting among economic sectors

[13]. There is need to enhance human technical capability including enhancement of training for Blue Economy qualifications, competence, skills, expertise, and experience including governance coordination framework, implementation plan, capacity building through awareness creation, catalytic and sensitization on Blue Economy potential opportunities including stakeholders' identification, mapping, analysis, engagement, and consultations for the AU-ABES five thematic areas:

- Fisheries, aquaculture, conservation and sustainable aquatic ecosystems;
- Shipping/transportation, trade, ports, maritime security, safety and enforcement;
- Coastal and maritime tourism, climate change, resilience, environment, infrastructure; and,
- Sustainable energy and mineral resources and innovative industries; and, Policies, institutional and governance, employment, job creation and poverty eradication, and innovative financing [12].

The 6th EAC Development Strategy was preceded by the 5th EAC Development Strategy, the first of the series implementing EAC Vision 2050. According to Vision 2050, the period 2015–2030 focuses on consolidation and transformation of the regional economy by providing the environment and incentives to make EAC a production-oriented region, addressing constraints that are known to create disincentives for integrated joint development for transformation in the region. The focus for the 6th EAC Development Strategy (2021/22–2025/26) remains:

- Infrastructure development, human capital for long term skills development, consolidation of the EAC Common Market;
- Funding of regional initiatives;
- Strengthening the financing and banking systems, expanding savings and investment, Research & Development (R&D) and security and governance;
- Innovation and diversification under all the EAC Vision 2050 phases with the last period entailing high end innovations and advanced value chains;
- Consider the regions medium term strategic responses to contain the devastating effects of COVID 19;
- Maximize on the synergies across the region;
- The Partner States Medium Term Plans (MTPs) will also integrate regional priority interventions; and,
- The Strategy will consider the critical priorities in AU 2063 Agenda, SDG 2030, and the trade agreements EAC has entered as a region.

The EAC region is naturally and richly endowed with a variety of natural resources that provide a source of livelihood for several of its people. These resources include fresh water and marine, coastal water ecosystems; forests and wildlife, wetlands, rangelands, arable land, and

mountains; minerals and energy resources, and rich biodiversity [18]. These natural resources are potential drivers of national and regional economic development as their efficient utilization would result into sustainable development. Therefore, development activities in various productive and social sectors (including agriculture and livestock, energy, industry, infrastructure) must be managed well to avoid negative impacts which would cause environmental degradation.

The Blue Economy constitutes the Goal-6 of the Agenda 2063 and SDG Goal-14: life below water of the UN Agenda 2030. Initially, the key areas of intervention were Natural and Marine resources, Energy, Ports Operations and Marine Transport. Additionally, two more areas were included i.e., Blue Economy and Institutional changes, both of which are cross-cutting, within the three objectives namely:

- The quest for Coherence and Innovation including for Blue Financing and development of capacities;
- Coordination and Spatial Planning;
- Gender, youths and vulnerable people inclusiveness;
- Conflict resolution;
- Democratization of Blue Economy and the Awareness building and Communication; and,
- Transparency and Accountability.

Therefore, the East African Community Blue Economy Strategy (EAC-BES) the in-depth analysis shows the intervention areas as follows: prioritized based on anticipated socio-economic impacts on local communities and livelihoods; Fisheries and aquaculture; Ports and Shipping; Blue Tourism; Blue Carbon, Ecosystem Services & Livelihoods and Community Resilience; Energy (HEP, Solar, Geothermal, Ocean), Mineral, Oil & Gas; Research, Innovative Industries and Development; Blue Governance & Institutional change [18].

ECCAS (Economic Community of Central African States)

Given the immense wealth of African continent, and more particularly in the Central African States, a Regional Strategy for the Blue Economy will make it possible to strengthen and accelerate considerably the economic development prospects of the States and the Region as a whole, without destroying nature and its benefits [19].

The ECCAS Region offers a great diversity of situations but with exceptionally important potentialities in terms of the Blue Economy:

- 5 (five) Ordinary Coastal States: Cameroon, Gabon, Congo, DR Congo, Angola.
- 1 (one) Partially coastal and partially island State (Equatorial Guinea).
- 1 (one) fully island state (Sao Thome and Principe).
- 1 (one) coastal state “geographically disadvantaged” (DR Congo with only less than 15 kilometer of maritime coastline) but rich in continental natural resources;

- 4 (four) Maritime Landlocked States: Burundi, Central African Republic (CAR), Rwanda, Chad, and,
- Several States certainly without maritime landlines or geographically disoriented, but “riparians of Lakes” (Burundi, Rwanda, Chad, DR Congo) and whose last three more precisely fall under the so-called “Great Lakes Region”.

It is also important to add that this Community of 11 States located on both sides of The Equator is also one of the most abundantly irrigated in Africa. The Community has large rivers and streams including Congo Rivers, Sanaga, Wouri, Ntem, Oubangui, Chari, Logone, and Bénoué. These rivers make the Community to possess a Code of River Navigation [19].

In regard to this diversity of situations, it adds an absolutely impressive and promising reality for the region. ECCAS is one of the richest regions in Africa in terms of abundance and extreme variety of natural resources including: marine, aquatic, forestry, mining, and gas. The area of the Gulf of Guinea, which is the main maritime gateway of these States is particularly endowed with marine and natural resources.

This enormous potential of natural resources and sea and river basins obviously offers ECCAS Member States immense opportunities for the development of the Blue Economy [19]. ECCAS States, in particular its oil and mining States of the Gulf of Guinea, must imperatively take this saving train of renewable energies in motion, without however and obviously losing interest in their traditional resources which can only decline very gradually, at the risk of brutally destabilizing the fragile economies of these countries. With regard to women, we should welcome the ever-growing support given by the States of the ECCAS region (especially from seaports and national shippers’ councils) to women’s movements operating in the maritime sector, such as the very dynamic WIMAFRICA Association, and it will be necessary to move forward in this support, particularly in terms of training, financing of small activities or Small Medium Enterprises (SMEs).

COMESA (Common Market for Eastern and Southern Africa)

The COMESA Blue Economy Implementation Plan is based on the focus areas as identified in the Medium-Term Strategic Plan [20]. The Implementation of Action Plan is structured around the four areas of intervention, namely:

- Blue fisheries and aquaculture;
- Blue tourism;
- Blue energy; and,
- Blue transport.

Developed on a five-year base, it integrally captures the strategic objectives, targets and activities, intended results, indicators and means of verification for each area taken directly from the Medium-Term Strategic Plan [20]. The Implementation Plan will therefore contribute to the

achievement of the COMESA Blue Economy Strategy and hence to the COMESA Treaty. This achievement is essential to bridging the development gap in alignment to the African Union's Agenda 2063; the 2014 Africa's Integrated Maritime Strategy (2050 AIMS); the 2014 Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS); the 2015 UN Agenda 2030 (Sustainable Development Goals, SDGs); and the 2016 African Charter on Maritime Security and Safety and Development in Africa (Lomé Charter).

The AU Member States should be encouraged to ratify and or implement the most relevant African and global instruments in the field of the Blue Economy. The ratification and implementation of UNCLOS, IMO Conventions, FAO Agreement on Port State Measures and the UNFCCC should complement the African Union instruments and Agenda 2063. Effective and efficient utilization of the treaties and conventions will contribute to a sustainable Blue Economy that requires several legislative and regulatory tools in various areas to be in place [20]. These include:

Economic competitiveness: the Coordination Unit will have to ensure that the Member States, establish legal frameworks to enhance the overall and sectoral competitiveness of the different activities of the Blue Economy at the national and regional levels (SDG 9, 14 and 17). For example, the adoption of laws and regulations or the signing of international treaties and agreements enabling the development of modern maritime and river transport: the case of the Hamburg Rules of 1978, or the case of the Rotterdam Rules of 2008; or the case of Public Private Partnerships (PPPs) in the field of port and multimodal infrastructures; development of fisheries and aquaculture activities; promotion of national offshore mining, oil and gas industries (Mining, oil and gas codes with an off-shore component; joint venture schemes involving local economic operators).

Social and human development: there is no sustainable Blue Economy without an improvement in the social condition of the populations involved in this economy, and therefore without the mobilization of adequate means to fight poverty and inequality, following the SDGs (notably 1, 2, 3, 8 and 10). The Coordination Unit will thus have to verify that the Member States adopt legal and regulatory frameworks aimed at improving wage conditions and social protection of seafarers, offshore workers, fishermen and fish farmers: the case of the 2006 ILO Convention on Maritime Labour, health insurance schemes; or the case of collective agreements adopted by dockworkers for port activities; or the introduction and application of regulations concerning vocational training (the case of the ILO STCW Convention) or concerning the work of young people and women (SDG 4, 5).

Environmental protection and marine and aquatic ecosystems: This issue remains at the heart of the Sustainable Development Goals (SDG 6, 7, 12, 13, 14 and 15), and must therefore remain at the centre of the application of the Strategy in Member States. The Coordination Unit

should therefore check with AU Member States that this concern is supported by an appropriate legal and regulatory provisions. The Coordination Unit will strongly encourage the generalized application of UNCLOS, which provides, in its Part XII, a global framework for the protection of the marine environment to be enforced by most of the States of the world. The Coordination Unit will also encourage the implementation of the UNEP-led regional seas protection programme in Africa: the Nairobi Convention applicable to Indian Ocean Coastal States, and the Barcelona Convention applicable to the Mediterranean Coastal States. The same shall apply to all international regulations relating to the prevention and control of pollution of all kinds, whether arising from hydrocarbons (the case of the IMO Convention MARPOL 1973/1978, or the case of the CLC and FIPOL Conventions applicable in the event of accidents resulting in pollution); or whether they arise from chemicals (the case of the Basel Convention and the HNS Convention) or radioactive products or plastics. Similarly, the Coordination Unit will have to strongly promote the implementation, in the regions and the Member States, of FAO normative initiatives in favour of rational and sustainable management of fisheries resources per UNCLOS; or its international and national plans of actions for combating IUU fishing. The same should apply to climate change provisions (Paris Agreement 2015 + SDG 13—climate action).

Maritime safety and security: For the Blue Economy as for all other areas of economic life, no development can be “sustainable” in a context of insecurity. The Coordination Unit must, therefore, on the one hand, encourage the application in the Member States of all international, continental and regional regulations relating to the prevention and fight against maritime and river accidents (IMO Conventions: Safety of Life at Sea Convention, 1974; Convention on the International Regulations for Preventing Collisions at Seas [44] on Collision Prevention; SALVAGE 1989 on Maritime Assistance and Rescue; and the enforcement of international regulations and regional agreements to combat piracy, armed robbery and other criminal and illicit acts at sea [12,13]; International Ship and Port Facility Security Code (ISPS) Concept, Djibouti/Jeddah Code of Conduct on Piracy and Maritime Crime in the Gulf of Aden and the Indian Ocean). Clearly said, the success of the COMESA Blue Economy Strategy can only be real and profound if the current Coordination Unit works effectively for the implementation of this new regional Blue Economy Strategy, as well as for the enforcement of all the legal and regulatory instruments contributing to the establishment of a sustainable Blue Economy in COMESA region.

CONCLUSION

Blue Economy among other initiatives emerging, drive and associates Blue Economy and products to include: Blue Growth, Ocean Economy, Ocean Governance, Blue Governance, Blue Carbon, Blue Guardians, Blue Finance, Blue Bonds, and Blue Belt. The Blue Economy underpins

economic development and growth with potential and opportunities for achieving sustainable development as anticipated by the AU Agenda 2063 for inclusive sustainable development. The result of this article is that Blue Economy has potential opportunities to adequately drive Africa's growth and development. However, the approach on Blue Economy is still sectoral and requires policy articulation and formulation of programmes and projects that will address issues on creation of jobs, generate income and reduce poverty while at the same time promoting conservation, protection, and management of marine ecosystems.

Blue Economy resources are part of ecosystem that plays a major role in sustaining growth and economic development. In addition, achieving climate change mitigation, adaptation, and resiliency through absorption of carbon dioxide (CO₂), supporting coastal habitats such as mangrove forests, sea grass beds sequester carbon and help to protect coastlines, prevent soil and beach erosion from floods and storms.

The Blue economy has been described as the “new frontier of African Renaissance”. Its potential for catalysing socio-economic growth, increasing incomes, and generating employment in Africa is widely discussed in the media, economic reports and in international development environmental conferences. The potential for AU Member States to undertake Blue Economy growth is possible through trade, investment, finance, innovation, technology and knowledge. The economic benefits from the Blue Economy are yet to be scaled up in AU Member Countries. These countries should address constraints in infrastructure, human capital, and technical know-how, and operationalise the concept of ‘Blue Economy’ nationally, regionally and continentally anchoring to the Africa Blue Economy Strategy (ABES) by adopting a gradual approach when implementing ambitious strategies and policies.

Strategic interventions should be identified when implementing Blue Economy-based strategies, frameworks and policies nationally and regionally. Such interventions can relate to the development of ports, developing tourism while strengthening linkages with other sectors, harnessing the African Continental Free Trade Area (AfCFTA) to develop regional value-chains in blue products and services, and promoting blue growth in energy, finance, innovation, technology, research, and development.

The development of Blue Economy in AU Member Countries will allow the countries to be independent economically supported by their seas and oceans as they exercise political will in blue governance. The AU Member Countries will harness their marine resources to generate revenues to finance the continent's much needed development. However, Blue Economy strategies and policies have to encompass a range of complementary measures that involve regional cooperation. For example, Seychelles and Mauritius cooperating to jointly manage exclusive economic zone in the Indian Ocean. Transboundary areas including joint

maritime security and surveillance, environmental conservation, joint exploration of marine areas, and research and development on marine-based products require regional cooperation.

The result of this article is that Blue Economy has potential opportunities to adequately drive Africa's growth and development. However, the approach on Blue Economy is still sectoral and requires policy articulation and formulation of programmes and projects that will address issues on creation of jobs, generate income and reduce poverty while at the same time promoting conservation, protection, and management of marine ecosystems. In this regard, the study attempts to answer the question that Blue Economy is contributing to the achievement of sustainable development in AU Member Countries and Regional Economic Communities (RECs), and that the Blue Economy has potential opportunities to accelerate growth and development in Africa. However, the Blue Economy is very sectoral in approach and requires programmatic discourse to be explored through further research.

RECOMMENDATIONS

The recommendations provide specific areas for consideration by national governments and regional economic communities to enhance governance frameworks for effective and efficient institutional coordination mechanisms. The significance is to strengthen:

- Policy environment and governance to coordinate Blue Economy;
- Institutional mechanisms necessary to accelerate Blue Economy growth and development to shift and transform the economy;
- Institutions required to provide leadership for financing of Blue Economy;
- The implementation of capacity building interventions in the areas of state-of-the-art methodologies such as Lean Commercialization, User Experience and Design Thinking;
- Implementation of a mentoring program for the entrepreneurs in the Blue Economy in AU Member States;
- Establishment of a collaborative hub between the AU Member States where tools, equipment and staff can be pooled, and trained to undertake project work or to develop contracts and collaborate with commercial entities on Blue Economy initiatives;
- The development of a criteria on Blue Economy development achievement to be used in the assessment of projects proposals by development and financing institutions;
- Supporting a capacity building intervention which focuses on the establishment of cooperatives in different Blue Economy sectors in AU Member States; and,
- Promoting the development of a collaborative ecosystem between the coastal and inland countries in Blue Economy participation, and development achievement.

AUTHOR CONTRIBUTIONS

Patrick Karani, principal author, was one of the experts that developed the AU Africa Blue Economy Strategy; Blue Economy Framework for Governance and Coordination Mechanism; and Implementation Plan. He contributed the chapter on: Coastal and maritime tourism, climate change, resilience, environment, infrastructure. He participated in the validation workshops of the COMESA regional Blue Economy Strategy; EAC regional Blue Economy Strategy and the Madagascar National Blue Economy Strategy.

Pierre Faillar, corresponding author, was the lead expert of the AU Africa Blue Economy Strategy. He contributed to the Fisheries, aquaculture, conservation and sustainable aquatic ecosystems, and, Policies, institutional and governance, employment, job creation and poverty eradication, innovative financing, Blue Economy Framework for Governance and Coordination Mechanism; and Implementation Plan. He also, developed the Madagascar National Blue Economy Strategy.

Asmerom Mengisteab Gilau, contributed to Africa Blue Economy Strategy chapter on Sustainable energy and mineral resources and innovative industries, Blue Economy Framework for Governance and Coordination Mechanism; and Implementation Plan. He also, developed the Somalia National Blue Economy Strategy.

Martin Ndende, contributed to the development of Africa Blue Economy Framework for Governance and Coordination Mechanism; and Implementation Plan. He also, developed the Congo Republic National Blue Economy Strategy and the ECCAS regional Blue Economy Strategy.

Serigne Tiam Diop contributed to the Africa Blue Economy chapter on Shipping/transportation, trade, ports, maritime security, safety and enforcement, Blue Economy Framework for Governance and Coordination Mechanism; and Implementation Plan. He also, developed the Burkina Faso National Blue Economy Strategy.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

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