Policy Article

Blue Economy Policy Model for the Small Island Developing States: The case of Zanzibar

Abstract

The sustainable development of world social economic actors, activities and sectors depends upon the nature and character of world's oceans, seas and coastal areas – the largest ecosystem on the planet. The global blue economy policy objective articulated in form of the Sustainable Development Goal # 14: is to conserve and sustainably use the oceans, seas and marine resources for sustainable social economic development. The paper presents the Blue Economy Policy Model for the Small independent Developing Island States, (SIDS) using an analytical policy model.

The Blue Economy Policy Model considers wealth resources as stock and flow variables and theses are dynamic and complex production transformation function of exogenous, endogenous variables, other interdependent operations and social economic welfare. The solution and policy objective are to optimize wealth resources, for sustainable social economic welfare. The social economic welfare is a "happy state of human mind" in form the sum total of all satisfactions experienced by an individual and communities as the sum total of individual welfares in a certain geographical location.

The paper recommends that in order to achieve the "transparent, equitable and optimal exploitation of all wealth resources to underpin broad-based sustainable growth and socio-economic development" the small independent developing states such as Zanzibar must take into account conditions and the importance of strengthening all wealth resource-based linkages while resources are extant so as to maximize the developmental and inter-generational impact of those resources. Also, this include the ability to see beyond national corporates and boundaries permits recognition of serious global development markets and trade threats that lie elsewhere within the dynamic context as well as the chance to pursue opportunities that would otherwise be missed.

Key Words: Blue Economy Model, social economic development, population growth, Zanzibar

1.1.Background

1.1.1. Sustainable Development Goal # 14:

The world social economic development, population growth, improved livelihoods and stable food security depend upon the world's oceans, seas and coastal areas – the largest ecosystem on the planet, (Commonwealth Secretariat, 2016). *The global policy objective* articulated in form of the Sustainable Development Goal # 14, is to conserve and *sustainably* use the oceans, seas and marine resources for sustainable development, (UNDP, 2015). In particular, this goal recognizes the critical contribution the ocean resources can make to the sustainable development of the smallest island and most *vulnerable nations*. *The global "blue economy" strategy* set practical strategies to ensure that current social economic activities do not compromise the long-term capacity of ocean ecosystems to support those activities, and remain resilient and healthy, (Economic Commission for Africa, 2016).

The Brundtland Commission defined sustainable development as "*meeting the optimal needs of the present without compromising the ability of future generations to meet their own needs'* (Peacock, 2008). Sustainable development of the *smallest, islands and most vulnerable nation's* calls upon the need to optimize natural resource creation and utilization obtained from the development of their marine environments e.g., fishery agreements, bioprospecting, oil, gas and mineral extractions. Moreover, governing the ocean resources effectively is a uniquely cross-nationals, generations and cross-sectoral challenges.

With its cross-cutting nature, the blue economy concept offers a unique opportunity to address complex and inter-connected challenges, without compromising economic growth (Commonwealth Secretariat, 2016). This is a concept that, if implemented effectively, can contribute to a significantly broad range of sustainable social economic welfare (*SEW*), for these countries. It has the potential to help these countries to make the transition from their current *SEW* trajectories of over consumption to more resource-efficient societies that rely more strongly on renewable marine resources to satisfy consumers' needs and industry demand, and to tackle climate change.

In order to fully optimize ocean wealth resources available by pursuing a blue economy approach, fundamental system changes are required to address the matter of ocean governance at the national, regional and global system levels, (Commonwealth Secretariat, 2016). If we are going to obtain optimal ocean solutions that are sustainable over the long term, we need to recognize the interdependencies of strategic dimensions of sustainable development, which must be mutually reinforcing, (Economic Commission for Africa, 2016).

Also, in order to fully optimize ocean wealth resources there is need have good ocean governance and to comply with the United Nation convention on the law of the sea UNCLOS 1982. Ocean governance and UNCLOS 1982 illustrate nature's ocean wealth resources potential. These show that we can accurately quantify the value of marine resources. Further, by enumerating such values, we can encourage their protection or enhancement for the benefit of people all around the world. And it clearly articulates not just that we need nature, but how much we need it, and where.

Fundamentally, existing resource sectors must be owned, managed and operated in a much more sustainable manner. Small independent developing states, (SIDS) must also embrace the development of new, local and own social capital resources, activities and sectors, many of which have a strong technology base, to achieve more diversified and resilient economies. SIDS are strategically endowed by huge ocean wealth resources due to their geographical nature and having smaller geographical land as compared with the maritime area. Such as Zanzibar Island having similar characteristics with SIDS relies heavily on the sea for both social and economic activities due to the smallest land area.

Nevertheless, the sea and coast of many of SIDS face increasing pressure from existing activities such as shipping, fishing and tourism. This is compounded by the potential generation of alternative energy, along with oil and gas exploration, which will create an additional strain on our marine resources. Coupled with this, the resources are overwhelmed by several challenges stemming from rapid population growth, climate change and maritime insecurity (Zanzibar Planning Commission 2020).

1.1.2. Abundant Ocean Resources

The natural resources or wealth (*Wn)* under the Blue Economy framework consists of aquatic and marine spaces, including oceans, seas, coasts, lakes, rivers, and underground water, and it comprises a range of productive sectors, such as fisheries, aquaculture, tourism, transport, shipbuilding, energy, bioprospecting, and underwater mining and related activities. The ocean resource is an essential part of the Zanzibar national state wealth – from the uses made of ocean space, the social and economic values we attach to it, the important goods and services it supplies, to the activities it supports, (Commonwealth Secretariat, 2016). It is paramount for Zanzibar and other countries which use ocean space to sustainably manage their natural resources or wealth, in the ocean and on land, for the benefit of present and future generations.

The abundant ocean (*also the sea or the world ocean*) is the body of salt water which covers approximately 71% of the surface of the Earth. It is also "any of the large bodies of water into which the great ocean is divided" (Gleick, 1996). These include five oceans, in descending order by area, the Pacific, Atlantic, Indian, Southern (Antarctic), and Arctic Oceans. These oceans have maritime zones recognized under international law include internal waters, the territorial sea, the contiguous zone, the exclusive economic zone (EEZ), the continental shelf, the high seas and the Area.

As explained in the UNCLOS 1982, these are conceptual division of the Earth's water surface areas using physiographic or geopolitical criteria. As such, it usually bounds areas of exclusive national rights over mineral and biological resources, encompassing maritime features, limits and zones. These zones give coastal States different jurisdictional rights. In general, a State has more rights in zones near to its coastline than it does further into the ocean. The main challenges associated with these maritime zones are how variations in geography affect where maritime zones end and where new maritime zones begin within the oceans (UNCLOS,1982).

Seawater covers approximately 361,000,000 km^2 (139,000,000 sq mi) and is customarily divided into several principal oceans and smaller seas, with the ocean as a whole covering approximately 71% of Earth's surface and 90% of the Earth's biosphere. The world ocean contains 97% of Earth's water, and oceanographers have stated that less than 20% of the oceans have been mapped. The total volume is approximately 1.35 billion cubic kilometers (320 million cu mi) with an average depth of nearly 3,700 meters (12,100 ft). (Gleick, 1996)

As the world's ocean is the principal component of Earth's hydrosphere, it is integral to life, forms part of the carbon cycle, and influences climate and weather patterns. The ocean is the habitat of 230,000 known species, but because much of it is unexplored, the number of species in the ocean is much larger, possibly over two million.

Human resources, (*Wh*), have been using the ocean (*Wn)* for a variety of *SEW* purposes, for example power generation, trade, travel, food consumption, leisure, extractive industries, navigation, exploration, and other social economic activities. Many of the world's goods and services are moved by ship between the world's seaports. Oceans are also the major supply source for the fishing industry, of which the major harvests are shrimps, fish, crabs and lobsters. Oceans provide a substantial portion of the global population with food and livelihoods and are the means of transport for 80% of global trade.

The marine and coastal environment also constitutes a key ocean resource for the important global tourism industry; supporting all aspects of the tourism development cycle from infrastructure and the familiar "sun, sand and sea" formula to the diverse and expanding domain of nature-based tourism named as coastal and marine tourism. According to OECD, more than 75% of vacations are spent on coastal cities all around the World. Added to that cruise ships have a non-negligible place in the leisure industry (OECD, 2017). The marine and coastal for the archipelagic Island like Zanzibar has idyllic beaches, balmy weather and warm tropical waters, this archipelago is renowned for clear warm waters, coral reefs and rich marine diversity making it a perfect under-water destination for snorkeling and diving (Hafidh and Rashid, 2021).

There is also immense development potential in the blue economy; this can be done by establishing blue economy strategies for coastal and marine tourism economies in becoming the best tourism destination in the world. Special focus is on the challenges for the leveraging of coastal and marine tourism for an inclusive tourism economy. 'Inclusion' represents one of the central principles behind the United Nations Sustainable Development Goals which were agreed to in September 2015 (UNCTAD, 2017.

The seabed currently provides 32% of the global supply of hydrocarbons with exploration expanding, (Gleick, 1996). Advancing technologies are opening new frontiers of marine resource development from bio-prospecting to the mining of seabed mineral resources. The sea also offers vast potential for renewable "*blue energy*" production from wind, wave, tidal, thermal and biomass sources.

1.1.3. Zanzibar as a Small Island Developing State

Zanzibar is blessed with a strategic global location in the Indian Ocean, a pleasant climate, a stable government system and a diverse culture backed by the peaceful coexistence of many ethnic groups and faiths, (Zanzibar Planning Commission, 2020). Small in its land area (size), Zanzibar has a vast area covered by the Indian Ocean, both in its territorial waters as well as its Exclusive Economic Zone (EEZ). Like many small islands developing national states, Zanzibar has implicit jurisdiction over globally significant ocean areas due to the sense that, which typically far exceed their terrestrial footprint and are therefore dependent to a large extent on ocean resources and the sectors they support. Also, like other coastal and island nations, Zanzibar is increasingly looking to its ocean natural resource to bolster slowing growth in its terrestrial economy by exploring new opportunities for investment, production, trade, consumption and employment (Commonwealth Secretariat, 2016 and Economic Commission for Africa, 2016).

Zanzibar prosperity does not grow out of a country's natural endowments, ocean-based economy, its labor pool, its enabling environment and presence of good policy, legal and institutional frameworks as the blue economy insists. A country rapid economic growth accompanied with promotion and protection of the strategies planned to obtain sustainable development (Hafidh and Mkuya, 2021). Effective implementation of well-planned policies and strategies will play the major role for obtaining sustainable economic development in Zanzibar.

Since 2020, Zanzibar has embraced the "*Policy Concept*" of the '*Blue Economy'* as a mechanism for realizing sustainable growth centered on an ocean-based economy. Also, the blue economy is one of the key components of the new Zanzibar Development Vision 2050

about the role of coastal and ocean waters in sustainable development. For Zanzibar, the concept of the blue economy presents itself as a promising avenue for social economic welfare, diversification, transformation and growth embedded in fundamental principles of environmental sustainability, (Economic Commission for Africa, 2016 and Zanzibar Planning Commission, 2020). This suggests Zanzibar has to refocus and switch its main national policy foundations from poverty reduction objectives and strategies to optimal utilization of wealth resources policy objectives and strategies.

The importance of marine and coastal resources to Zanzibar is evident. The Blue Economy, however, offers the potential for SIDS to alleviate one of their defining obstacles to sustainable development; namely that of a *narrow resource base*. The remarkable per capita marine resource area enjoyed by many SIDS means that the Blue Economy approach offers the prospect of sustained, environmentally-sound, socially inclusive economic growth. SIDS must prepare now in order to position them properly to realize the optimal benefits for their sustainable development from the coming blue revolution. The benefits of the Blue Economy, however, are not exclusively tailored for SIDS (e.g., Zanzibar), they are equally applicable to many coastal countries (e.g., Tanzania Mainland) and ultimately the Blue Economy approach offers the means for the sound utilization of resources beyond national jurisdiction – the sustainable development of the common heritage of humanity; the resources of the High Seas.

This fundamental contribution of the ocean reaffirms a critical need to achieve better coherence across the social, economic and environmental pillars of sustainable development, but in a fundamentally different way from the manner in which modern society has historically viewed the balances and linkages up to now, (Commonwealth Secretariat, 2016). The huge maritime area of Zanzibar, shoreline & the coastal waters can be used in a very coordinated way as they can sustainably contribute to the blue economy on improving socio-economic development of the coastal population as well Zanzibar economy.

A paradigm shift is needed in how Zanzibar social economic entities to own, manage, operate and use ocean resources to reverse current piecemeal approaches that lead to under-exploitation and incompatibility of uses. Such a paradigm should be strategic, integrated and cross-sectoral. This resource nationalism is the tendency of local people and governments to assert control over natural resources located on their territory.

The approach of peak oil has led many governments to take ownership or control of fossil fuel reservoirs for political, social economic strategic reasons, although resource nationalism applies to other resources, such as metals, or in less developed nations, mining investment. It is now required in the Blue Economy to institute some form nation ownership or control of natural resources located on their territories to optimize sustainable social economic development objectives. This emphasizes that ocean resources in Zanzibar belong to the people of Zanzibar local ownership is necessary and sufficient condition for optimal sustainable social economic development. It guarantees the need for healthy, productive and biologically diverse oceans, well-established and newly emerging economic activities; sustainable livelihoods and secure human settlements, (Economic Commission for Africa, 2016).

1.2.Objectives of the Paper

Objective of this policy paper is to present and discuss the blue economy policy model for the small island developing states. This is a theoretical or analytical policy model. The paper has three main sections. Section 1 has been the introduction. Section 2 presents the Blue Economy Policy Model. This consists of the Preamble: Creation and Utilization Objectives and Strategies; Definitions of the wealth of a nation; Assumptions and Conditions for Wealth Creation and Optimal Utilization; The Structural Blue Economy Policy Model; The Reduced Blue Economy Policy Model; Policy Model Solutions, Options and Targets. Section 3 is the Conclusion consisting of main policy implications and recommendations.

2.0.The Blue Economy Policy Model

2.1. Preamble: *Creation and Utilization Objectives and Strategies*

The process of sustainable social, political and economic development in many SIDS countries entail broad involvement among key national, regional and global stakeholders, a factor that has contributed to underlying consistency in the blue economy policy objectives. With current increased international collaboration in blue economy maters, one of the most significant outcomes has been placing the broad strategy of optimization of ocean resource at the centre of national, regional and global policy agendas. Many of the SIDS countries have formulated national blue economy policies, targets and wealth creation and optimization strategies. These notwithstanding, the optimal wealth creation and utilization under blue economy policy processes have features that call for continuous collaborative monitoring, controlling, and evaluations at national, regional and global levels.

2.2.Definitions of the Wealth of a Nation

Wealth creation is an accumulation of productive resources and assets (especially those that generate more incomes) over a long period of time, (Martinavičius, 2013). Wealth can be valued and translated into a great amount of resources, such as money, property, possessions or knowledge and information. The fundamental objective of optimal wealth-creation and utilization is to increase net-worth for interests of all at all time. The ultimate aim is to keep increasing all assets, while reducing their liabilities toward zero. Importance of saving and investing towards wealth creation and utilization is it takes resources to make money; just as it takes wheat to grow wheat.

The benefits of wealth include inclusive financial resource freedom; greater social economic activities options and opportunities, increased time leverage; higher and better-quality health, education and social cultural development, (Martinavičius, 2013). The UN definition of *inclusive wealth* is a monetary measure which includes the sum of natural, human and physical resources or assets.

2.2.1. Wealth Resource is conceived as a stock or and flow resource

Wealth is conceived as a stock or and flow resource variables at a particular point in time. Wealth as stocks of assets (*resources*) can be used as inputs or factors of social economic transformations to generate future incomes and well-being. 'Wealth' can refer to some flows and accumulation of resources (*net asset values*), whether abundant or not. 'Richness' refers to an abundance of such resources (*incomes or flows*). A wealthy individual, community, or nation thus has relatively more accumulated resources than a poor one. The opposite of

wealth is *destitution*. The opposite of richness is *poverty*. Despite of their nature, locations and sizes many of these small island development states are *neither poor nor destitute*.

The term social economic wealth implies a social contract on establishing and maintaining *national* ownership, management and utilization of wealth resources in relation to such items which can be invoked with little or no effort and expense on the part of the owner. The concept of wealth is relative and not only varies between societies, but varies between different times, location, sections or regions in the same society, (Commission on Growth and Development, 2008). With overall or national wealth defined as the net present value of future income, it is now helpful to explore the various sub-components, (Martinavičius, 2013).

2.2.2. Forms of Resources

The wealth of a nation, (*W*) consisting of both stocks and flows can be partitioned into its respective forms of resources (capital), the most important of which include:

I. Human resource (capital), which incorporates the education, health, social cultural and stock of information and knowledge embodied in human beings within a country (*Wh*);

II. Physical or produced capital (*Wc*), which includes physical capital equipment, machineries, technologies, infrastructure, buildings, machinery, and so on;

III. Natural resources, (*Wn*) which includes the underground assets (minerals, fossil fuels), commercial land, fish stocks, and natural land including the ecosystem services that it provides;

IV. Intellectual property, (*Wi*), which includes the value of contracts, leases, patents, software, databases, and other intangible property;

V. Social-institutional capital, (*Ws*) incorporates intangible factors such as the quality of policies, laws, regulations, institutions, and various forms of governance systems that enable goods and services to be produced; *and*

VI. Net financial resources (capital assets), (*Wf*) the measure of the net holdings of financial resources and assets across national borders. Within national borders financial assets and liabilities cancel.

There are limited quantities of resources (*Wi*) in many SIDS economies, (Sarker and Newton, 2008). These resources are used in basic economic development activities such as investments, production and consumption, (Hritonenko and Yatsenko, 1999). The country's social economic development, economic efficiency, welfare or living standards as well as its weight in the international community is predetermined by its available resources and the nature of their utilization, (Martinavičius, 2013). This includes reinvesting resource rents and royalties in more productive and dynamic sectors of the economy, which in turn are linked to the resource-exploiting sectors of the domestic economy, (Barbier, 2005).

The Blue Economy policy model considers core optimal wealth creation and utilization policy objectives as endogenous and policy target variables, (Sarker and Newton, 2008). The endogenous variable is considered as a policy target variable in basic policy models and these

changes are determined by their relationships with other variables within the social economic environment. In other words, an endogenous variable is synonymous with a dependent variable, meaning it correlates with other factors within the social economic system being assessed, (Alain Martel and Walid Klibi, 2016). The wealth of a nation, (*W*) can be formalized as complex function of different forms of interdependent wealth resources,

$$1 \quad W = W_h + W_c + W_n + W_i + W_s + W_f$$

Whereby we have define Human capital as W_h; Physical or produced capital as W_c, Natural capital as W_n; Intellectual property as W_i, Social-institutional capital as W_s *and* Net financial assets as W_f the measure of the net holdings of financial assets across national borders.

Relation 1 is a complex, linear equation and assumes that wealth of a nation is a set or combination of interdependent wealth resources that work closely together to identify, create, deliver and sustainable social economic development. For example, human-made, or physical, capital, human capital and natural capital all contribute to wealth or social economic welfare through supporting the production of goods and services in the economic processes, (Barbier, 2005 and Sarker & Newton, 2008).

Wealth, in relation 1 may be considered as a set of economic reserves or assets and thus will present a source of security providing a measure of a social economic entity ability to meet emergencies, absorb economic shocks, or provide the means to live comfortably, (Peacock, 2008). Wealth reflects intergenerational transitions as well as accumulation and utilization of incomes and savings. Incomes, age, marital status, family size, religion, occupation, and education are all predictors or factor variable for social economic wealth attainment.

Also, we will note that wealth creation and utilization analysis extend across all social economic development actors, activities and sectors and it is useful to consider both when policy options are articulated, (Walters, 2002). Wealth creation and utilization analysis also identifies sectors that are underserviced or which offer opportunities for improving wealth contributions to social economic actors and participants by directing companies towards sectors of the value creation to which their competencies could be applied effectively. This can result in increased profitability and competitive advantage, (Walters, 2002).

2.2.3. Sustainable Wealth Management

For sustainability, the Blue Economy policy model considers majority of wealth as likely founded, dependent and embodied in the '*human beings*, social entities and capital'—institutional stock of knowledge, skills, and capabilities—along with the 'institutional and social capital'—the rule of law, enforcement of property rights, a stable financial system, and so on in the society in which all depend and live, (Peacock, 2008). Human resource or capital enables institutions to generate income in the future; institutional capital provides the critical social underpinnings for income generation, along with protection of wealth from exploitation or destruction by others, (Hritonenko and Yatsenko, 1999). Wealth refers to value of everything an institution owns, operates and manages. By institution or social economic entities we refer to national individuals, families, households, public entities, firms, cooperatives, non-state actors, and the rest of the world institutions living, operating within defined national boundaries.

Changes in wealth creation, utilization and sustainability are closely intertwined, as is apparent from dynamic social economic systems (Hritonenko and Yatsenko, 1999). This is because wealth is a measure of the net present value of the future stream of consumption from an asset. If real wealth is declining (*increasing*), the expected present value of that future stream of consumption is also declining (*increasing*). This leads to several basic prescriptions to ensure sustainability.

Given that physical and human capital have increased dramatically in most countries over the last century, concerns about sustainability focus on the depletion of natural capital, including the exploitation of exhaustible resources (e.g. minerals, oil, gas and other fossil fuels) and especially the destruction of renewable resources (e.g. ecosystems, fisheries, forest, climate stability), (Hritonenko and Yatsenko, 1999).

2.3.Assumptions and Conditions for Wealth Creation and Optimal Utilization

Because of the complexity of most real blue economy problems, it necessary for us, when applying economic mathematical approaches, to reduce the complexity of the problem by either simplifying the problem or constraining it by making numerous assumptions and conditions, (Sarker and Newton, 2008). The following are main Blue Economy policy model assumptions and conditions;

2.3.1. Major Assumptions

The world economy is assumed to have with a large number of very small, independent and developing states, where the per capita cost of government and public services are inevitably high. Because of their small sizes, they have little scope to diversify their economies, which leaves them highly vulnerable to external economic shocks. In specific, the model assumes;

A. There exists national development vision and strategic plan as some vital methods of providing, controlling, effecting and executing wealth creation and utilization. The framework of national development plan constituting an impressive institutional structure through which additional resources can be channeled for development

B. There are existences of effective policies, laws, regulations and institutional frameworks and management systems with the sole responsibility of coordinating effective wealth creation and utilization objectives, strategies and line of activities.

C. These SID countries have access and are rich in ocean resources. Some of these economies may be blessed with abundant oil, minerals, or other natural resources and are able to invest the “rents” or proceeds at home, raising their growth potentials.

D. National governments, regional and global development partners have same and consistent development policies or at least not conflicting interests concerning uses of global ocean wealth resources. There must be committed, credible and capable governments with a well-defined growth strategy. International experience suggests that growth strategies tend to be more successful when they include the promise of efficiencies, effectiveness, and equal opportunities, which is offering all citizens the same responsibilities, and possibilities for enjoying the fruits of growth

E. These are open and small economies. There are free entry and exist of goods and services in these economies. All forms of trade, imports and exports country's part and parcel of national, regional and international communities. Theories of international division labour, trade liberazation and specialization are crucial theoretical explanations as to why and how SIDS countries have to participate into world trade.

These assumptions guarantee existence of solid national development systems aiming (i) Self-sufficiency in the basic requirements; ownership, management and operation of all major resources for the benefit of current and future generations and nationals (ii) The proper and efficient utilization of domestic resources; (iii) An attainment of a fair and equitable way of life; (iv) An improvement in the social standards; *and* (v) Total control on macro-economic factors such as inflation, balance of payments, government deficit and other adverse effects, which can be detrimental to the nation's socio-economic well, (Peacock, 2008).

For exhaustible assets, wealth can be preserved and sustainability ensured if the revenues (e.g., rents, levies, and royalties) generated from resource extraction are reinvested in other forms of capital (physical, human, etc.), (Hritonenko and Yatsenko, 1999). This is true condition that produced capital appreciates over time and or the elasticity of substitution between factors of production is stable and acceptable. It is has to be strategic that the extraction of natural resources to be accompanied by net investment, with consumption responding only to the 'equivalent permanent value' of natural resource income.

It is strategic to require that these resources endowed to set up an intergenerational sovereign wealth fund to smooth consumption across generations, a liquidity fund to manage commodity price volatility, and an investment fund to park part of the windfall until the country is ready to absorb extra spending on domestic investment.

Also it is demanded that renewable natural capital could potentially provide an annuity of value into the long-distant future. Indeed, SIDS entire civilization and economic systems rely upon the existence of such renewable natural capital—a habitable climate, drinkable water, edible food from sustainable management of scarce land and the oceans, materials for construction of shelter and other infrastructure.

2.3.2. Necessary conditions

All countries aspire to high sustainable economic growth given that it makes reducing poverty and expanding opportunities for all citizens much more feasible. There is no doubt about targeting wealth creation and utilization for the purpose of present and future generation. But how are current high rates of growth and per capita income achieved and sustained over the long term? Clearly, there is no single magic formula. However, economists do agree on the ingredients that are necessary for any recipe for growth. The Growth Commission (2008) has used this useful recipe metaphor to list the necessary conditions:

I. *Macroeconomic stability*: in economist-speak, this is a necessary but insufficient condition. Many SIDS countries have also done well in this area, during last twenty-five years, 1985/65 - 202021. But we have noted that stability by itself does not necessarily generate high growth, as the performance of the many African economies in recent decades demonstrates.

II. *High savings and investment rates*: Above 25% of GDP, combining public and private investment and with significant investment in human capital and physical infrastructure. However, it is essential that the high levels of public investments do not threaten macroeconomic stability. To this end, the public sector needs sufficient resources and efficiency to be able to make the necessary expenditures to close gaps in human and physical capital.

III. *Liberal markets that function well in all sectors and commodity markets*, where prices are conducive to efficient investment, savings or consumption decisions and in which competition exists. Again, it is often said that there is no growth without competition, yet competition by itself does not guarantee growth.

IV. *Maximum Precautionary Measures Taken:* All global, regional and national social economic entities must be aware and take maximum precautionary measure against dangers, crises, degradation and catastrophes affecting the environment or human health. It is "better to be safe than sorry" stance using prompt protective actions rather than delay of prevention until scientific uncertainty is resolved, (De Lara and Doyen, Luc 2008)

Above assumptions and conditions ensure increasing economic dependence on ocean resources by these SIDS economies minimize traditional development challenges and limitations, (Barbier, 2005). *The first resource utilization related challenge* includes one popular explanation of the resource curse hypothesis, i.e., the poor potential for resource-based development in inducing the economy-wide innovation necessary to sustain growth in a small open economy, particularly under the ''Dutch disease'' effects of resource-price booms.

The second resource management related challenge is based on an open access exploitation hypothesis, i.e., trade liberalization for a developing economy dependent on open access resource exploitation or poorly defined resource rights may actually reduce welfare in that economy.

Finally, there is a traditional resource challenge of a factor endowment hypothesis. The abundant natural resources relative to labor (*especially skilled labor*), plus other environmental conditions, in these SIDS will lead to lower economic growth, either directly because relatively resource-abundant economies remain specialized for long periods in primary-product exports or indirectly because some factor endowments generate conditions of inequality in wealth, limited or constrained systems inimical to growth and development, (Barbier, 2005 and Karl Hinderer, *et al* 2016).

2.4.The Structural Blue Economy Policy Model

2.4.1. Endogenous and Policy Target Variables

In the structural blue economy model wealth resources are formalized both as a stock and flow variable. Each of these activities can contribute to a national relative cost position and create a basis for differentiation, (Hritonenko and Yatsenko, 1999).

W_t^i *wealth at – time t*

2.1

W_{t-1}^i *wealth at – time t – 1*

We define, identify and quantify wealth creation as flow variables as follows;

$$2.2 \quad w_v^i = W_{it}^i - W_{it-1}^i \quad \text{whereby } w_v^i \text{ is flow-variable and } i = 1,2,...6$$

Development in the form of creation is considered as the action or process of bringing something into existence. Social economic entities must design their wealth plans based on proven business systems, capacities and principles that lead to positive changes and successes. These principles include competitive advantage, leverage, accurate record keeping, and accountability– just to name a few. Wealth is created by a social economic entity e.g., private and public firms those provide an additional and unique value to their environment by adding more values to its outputs than the cost of all resources used to produce those outputs.

The dynamics of national wealth resources can now be formalized as, (De Lara, and Doyen 2008)

$$3 \quad W_{t+1} = W_t + w_t$$

where *W(t)* is the stock of wealth resources at the beginning of period [*t,t+1*[and $w(t)$ the creation during [*t,t+1*] related to social economic activities of the country Further or additional wealth is created through using, transforming and converting inputs or factors such as labor power and/or capital equipment, machinery and materials to make things, or provide/perform services, that other society find valuable, (De Lara, and Doyen 2008) .

We consider that all social economic entities in the SIDS sectors, markets and operations are rationale corporate entities thus have single objectives of minimizing costs and are profit maximizing operators, (Alain Martel and Walid Klibi, 2016). Above relations 2 and 3 restrict wealth resources to be significant positive stocks and flow variables and ensure that development meets the needs of the present without compromising the ability of future generations to meet their needs and that welfare does not decline over time, (Barbier, 2005).

2.4.2. Exogenous or Policy Instrument Variables

In order to assess wealth creation and to provide policy options for enhancing the contribution of the wealth resources to sustainable economic development, it is important to identify, define and determine important factors, variables and relationships determining performances of wealth resources in various levels and intensities of social economic sectors and activities. The performances of wealth creation and optimal utilization policy variables are complex function of interdependent endogenous (policy target variables); exogenous (policy instrument variables) and other external controlling variables.

In the basic economic policy model, an exogenous variable is one whose value is determined outside the social economic system (*internal*) and is imposed on the structural model, and a variable whose state is independent of the state of other variables in the social economic system. The exogenous factors are introduced inputs into the internal system, that is, present

and active in the social economic activities and operations but that originated and controlled by other forces, institutions, and powers and thus can be considered *as policy variable instrument*. Let us consider two types of exogenous variables.

The first categories are exogenous policy variables (*X*) which are outside the control of the specific economic entities (e.g., individuals, firms, communities) but inside the control of the national social economic systems. Many policy models include systems (policies, laws, regulations and institutions, infrastructural and resources (human, capital equipment machineries, and technologies) as national exogenous factors.

The second categories are external exogenous policy variables (*Z*), which are outside the control of the country or nation boundaries and human beings. These include unexpected, drastic and huge changes in environment, climatic conditions, global politics, trade, technological conditions, wars, Covid-19 and other catastrophes.

2.5.The Reduced Blue Economy Policy Model

In this Blue Economic policy model, social economic welfare, (*SEW*) is a "*happy state of human mind*" in form the sum total of all social, economic and political satisfactions experienced by an individual and communities as the sum total of individual welfares in a certain geographical location. Striving for socio-economic development, for better living conditions or simply saying "*for a better life or standard of living*" seem to be an inseparable part of human activities. Socio-economic welfare is considered as an end, means and dynamic in itself for the majority of states, nations and societies.

Let us restate the basic global policy objective articulated in form of the Sustainable Development Goal. The general policy objective of the Blue Economy Model is to optimize wealth resources, (*W*) creation and utilization. The solution of the Blue Economic policy model is the existence of multiple Pareto efficient arrangements of the distributions of social economic welfare *activities* such as investments, production, trade, distributions, consumptions, savings and also moving the economy toward Pareto efficiency is an overall improvement in social economic welfare, (*SEW*). The model requires provisions of specific targets as to which arrangement of economic resources across social economic entities, sectors and markets to maximize social economic welfare. In this model all SIDS nations have well defined social economic welfare functions and maximizing the value of these functions then become the goal of economic policy analysis.

The model solution states that the overall and final objective of maximizing current social economic development is to optimize current and future national social economic welfare development, (*SEW*). We model social economic development to include all current and future social, economic and wealth aspects. The socio-economic welfare is an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others. *When considering national, family or individual social welfare development aspects, we can include incomes and wealth resources*.

Social economic entities in the SIDS have different types of incomes. Globally, income is treated as increases in social economic benefits during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants. Also, income "is the

maximum amount which can be spent during a period if there is to be an expectation of maintaining intact, the capital value of prospective receipts (*in money terms*). That is income is the consumption and saving opportunity gained by an entity within a specified timeframe, which is generally expressed in monetary terms.

For individuals, families, households and communities; "incomes are the sum of all wages, salaries, profits, interest payments, rents, and other forms of earnings received in a given period of time, (*also known as gross income*). Net or disposable income is defined as the gross income minus taxes and other deductions (e.g., mandatory pension contributions), and is usually the basis to calculate how much income tax is owed. Income from wages, salaries, interest, dividends, business income, capital gains, and pensions received during a given tax year are considered taxable income. These types of incomes would be classified as ordinary income and are taxable using ordinary income tax rates.

In the field of public or national economics, the concept may comprise the accumulation of both monetary and non-monetary consumption ability, with the former (monetary) being used as a proxy for total income.

"Full income" refers to the accumulation of both the monetary (financial resources) and the non-monetary consumption-ability of any given entity, such as a person or a household. "Classical definition of income" to include sum of (1) the market value of rights exercised in consumption and (2) the change in the value of the store of property rights." Since the consumption potential of non-monetary goods, such as leisure, cannot be measured, monetary income may be thought of as a proxy for full income. As such, however, it is criticized for being unreliable, i.e. failing to accurately reflect affluence (and thus the consumption opportunities) of any given agent. It omits the utility a person may derive from non-monetary income and, on a macroeconomic level, fails to accurately chart social welfare, (Peacock, 2008).

In practice money income is a proportion of total income varies widely and unsystematically. Non-observability of full-income prevents a complete characterization of the individual opportunity set, forcing us to use the unreliable yardstick of money income. Income can also come in the form of unemployment or worker's compensation, social security, pensions, interests or dividends, royalties, trusts, alimony, or other governmental, public, or family financial assistance. It can also come from monetary winnings, as from remittances or any form of external earnings.

Equation 3 has identified and defined wealth as flow variables. We will now define development flow of wealth variable and as a complex production transformation function of exogenous (inputs *X and Z*), endogenous variables (other interdependent operations) and other important national policy variables, Social Economic Welfare, (*SEW*));

$$4 \qquad w_v^j = w_i\ (\ X,\ Z,\ w_v^j,\ SEW) \qquad \text{where} i \text{ and } j = 1.\ 2,..., 6$$

We will focus and assess inputs (*X, Z*) and outputs (*w*) as measured in flow units: a certain amount of input per week/month/year and a certain number machine hours per week/month/year will produce a certain amount of output a week/month/year, (Alain Martel and Walid Klibi, 2016). Equation 4 considers that each wealth created, activities and firms have stakes in the success of the others. Each search for ways in which inputs (*X, Z*) can be utilised cost-effectively throughout the social economic processes and activities. The Social

Economic Welfare, (*SEW*) variables are considered as external and pulling factors in relation 4. These are factors that attract social economic entities to desire, search and acquire more and additional wealth resources at a particular point in time.

We consider that all social economic actors and markets face fixed prices for its inputs and outputs and have a market where the individual producers take the prices as given and or determined in a competitive market system. The economic policy model focuses on the wealth creation and optimal utilization of social economic entities those facing competitive markets for the factors of production they use and the output goods they produce.

If these social economic entities have made the optimal wealth choices of all inputs (*X*, *Z*), the value of the marginal product of each factor should equal its product market price and thus optimizes wealth. The optimal ocean resource exploitation will yield greater benefits to the SIDS in Africa and thus the optimal wealth resources for these SIDS countries are defined as (Barbier, 2005);

$$5 \qquad w_v^{i*} = w_i \ (\ X^*, \ Z^*, \ w_v^*, \ SEW^* \ ) \qquad where i \ and \ j = 1, \ 2, .., \ 6$$

In the blue economic policy model, the observed and actual optimal wealth values will be not necessarily be the same as desired or optimal levels at a particular point in time, (Alain Martel and Walid Klibi, 2016). The actual optimal wealth value for these social economic entities at a specific point in time will be;

$$6 \qquad w_v^{ia} = w_i \ (\ X^a, \ Z^a, \ w_v^a, \ SEW \ ) \qquad where i \ and \ j = 1, \ 2, .., \ 6$$

Above equations 4, 5 and 6 introduce elements of dynamic model social economic wealth. The dynamic relations suggest that to increase and keep the value of national wealth resources it requires the creation and strengthening of linkages between all social economic actors, activities and sectors. These social economic dynamics include: forward linkages all social economic sectors backward linkages into investments, production, consumption, logistics and technological development, (Uongozi Institute, 2017).

The dynamic model articulates those settings between various social economic actors in the economic system, such as suppliers of inputs, producers, traders, customers and their supporting institutions may be viewed as a structure that can be perceived as a complex dynamic networks or settings, (Alain Martel and Walid Klibi, 2016). Most economic units are rooted in a socio-cultural, technical, and economic environment of more or less stable relationships to other actors, (Jose, 1994). Furthermore, it is assumed that the advancement of technological capability may be comprehended as interactive technical processes. Knowledge and skills are also created, adopted, modified and developed as an outcome of the linkages one firm develops/is able to develop with other firms.

During social economic activity a social economic entity is interacting to create a niche (or an environment) for its *survival, growth and development*, (Hritonenko and Yatsenko, 1999). The economic environment, from the perspective of a single entity, may be viewed in terms of its dynamic context which is basically the set of social economic entities with which the single entity interacts. The social economic relationships are the results of continuous interactions between the actors and activities, which comprise activities such as buying and selling of input supplies, investments, production processes, trade, exports, imports, consumption, subcontracting arrangements and net flows with the rest of the world.

Social economic entities build up relationships with one another to gain access to input and output markets or exchange resources such as capital, personnel, technology, materials and information, (Alain Martel and Walid Klibi, 2016). These relationships reduce transaction costs connected to uncertainty, bounded rationality, small numbers, and information impact and asset specificity. Since the relationships are of a dynamic nature, they also become important structural determinants, contributing to structural change, source of innovation and inducing economic development. In so doing, social economic entities form sustainable economic systems.

The essential point about the blue economic system is that it allows technical, market and social efficiencies which single social economic entities units can rarely attain, (Hritonenko and Yatsenko, 1999). A set of global producers making the same product in close cooperation constitute a viable economic system. Over time, these kinds of linkages constitute major facilitating factor for sustainable economic development.

Utilization is the action of using resources and processes, i.e., making functioning, operative, practical, applicable and effective use of it. In business, utilization may also refer to the percentage of available time that a machine, device, or employee is actively is working. We now identify and compute *wealth utilization as the movements from the observed or actual created wealth to the desired or optimal created wealth positions.* The social economic entities utilize wealth resource when they minimize the differences between the non-optimal positions (*actual)* and desired optimal wealth created during transformation processes.

$$7 \quad MIN_{v}^{i}w = w_{v}^{i*} - w_{v}^{ia} \qquad whereby \quad MIN_{v}^{i}w \; is \; mnimial$$

Relation 7 suggests that the wealth utilization under the blue economy system starts at the initial or actual state and always attempt to move to optimal states at times $1 < t < T$ under the control of a sequence of actions (X, Z) consistently. Both the states and actions are executable and attainable. The states and actions belong to a state space W and an action space (X, Z) respectively. The choice of actions is subject to a restriction determined by the momentary state. The objective function is in general the sum of discounted rewards earned in the T periods. It includes a terminal reward when the evolution of the system ends at time T at the optimal state. (Karl Hinderer, *et al* 2016).

2.6.Policy Model Solutions, Options and Targets

The above presented equations 1 – 7 articulate a structural blue economy policy model determines wealth creation and optimal utilization of resources for sustainable development in the Small Island Developing States. The final dynamic blue economy model includes stocks and flow of both endogenous and exogenous variable levels at each particular of time and changes technologies, (Karl Hinderer, *et al* 2016).

The wealth creation as the first level-stage targets social economic development variables defined as;

$$8 \quad w_{v}^{iA} = w_{i} \; (\; X^{A}, \; Z^{A}, \; w_{v,}^{Aj} \; SEW^{W} \;) \qquad where i \; and \; j \; = 1, \; 2, .., \; 6$$

That is; the reduced form policy theoretical model is determined upon substituting vales of equations 6 and 7 into equation 8.

The second level-stage target is *optimal wealth utilization* of *social economic development variables defined as;*

$$9 \quad MIN_{v}w = w_i\ (\ X^{A},\ Z^{A},\ w_v^{Aj},\ SEW^{A}\ ) \quad whereby \quad i\ 1= 1,\ 2,...6$$

Equations 8 and 9 articulate potential policy options for the first and second levels or forms of wealth creation and optimal utilization enhancing the contributions of the sustainable social economic development, (Alain Martel and Walid Klibi, 2016).

Equations 8 and 9 determine appropriate policy objectives, strategies and actions articulating the options clearly. Based on above relations and assumptions in equations, 1, 2, and 3 we will be able to finally decide upon which of the policy options to be taken, implementing the strategic policy options and finally evaluating the implementation process.

These have to adhere to the principle of optimality. The optimal policy has the property that whatever the initial state and initial decisions are, the remaining decisions must constitute an optimal policy with regard to the state resulting from the first decision, (Karl Hinderer, *et al* 2016). The policy solution emphasizes the importance of strengthening all wealth resource-based linkages while resources are extant so as to maximize the developmental and inter-generational impact of those resources, (Karl Hinderer, *et al* 2016). This is the current, operational and consistent meaning of wealth creation in the blue economy countries. If managed appropriately, resource-based investments can lay the foundation for diversified economies. Conversely, if Zanzibar like other SIDS countries cannot make these social economic dynamics, then it would be best to leave the wealth resources unexploited until such time that the linkages can be made, (Uongozi Institute, 2017)

The blue economy policy objective is to conserve and *sustainably* use the national wealth resource for sustainable development in Zanzibar. That is, the optimal utilization the nation of the national wealth resource, (*W*) including Human capital as W_h, Physical or produced capital as W_c, Natural capital as *Wn (consisting of oceans, seas and marine resources);* Intellectual property as W_i, Social-institutional capital as W_s *and* Net financial assets as W_f the measure of the net holdings of financial assets across national borders. This is a complex function of different forms of *targeted wealth resources*.

$$10 \quad \hat{W} = \hat{W}_h + \hat{W}_c + \hat{W}_n + \hat{W}_i + \hat{W}_s + \hat{W}_f$$

Relation 10 recommends the need to identify and articulate realistic optimal wealth creation and utilization policy options and decisions required in the dynamic context and the processes that are necessary and sufficient to make them effective and efficient, in other words the strategic and operational features of the social economic development dynamisms, (Walters, 2002 and Ivan, *et al*, 2014).

Table 1 summarizes the current and proposed blue economy policy objectives and focuses. The current blue economy major policy objectives are fisheries and aquaculture, maritime trade, infrastructure, energy, tourism, marine and maritime resources. The proposed major blue economy policy objectives and focuses include Human capital as W_h; Physical or produced capital as W_c, Natural capital as W_n; Intellectual property as W_i, Social-institutional

capital as *Ws and* Net financial assets as *Wf* the measure of the net holdings of financial assets across national borders. The current blue economy policy objectives include both social economic sectors (trade, infrastructure, energy and tourism) and natural resources. The current proposed blue economy policy objectives focus on the optimal utilization of wealth resources. The current blue economy policy objectives are too general and inclusive and therefore tend to complicate systems, sectors and institutional governances. The proposed blue economy policy objectives are strategic and treat human resources as both targets and means of sustainable social economic development.

Table 1: Current and Proposed Blue Economy Policy Objectives and Focuses

	Traditional Blue Economy Objectives	**Proposed Blue Economy Objectives**
1	Fisheries and Aquaculture,	Human capital as *Wh*
2	Maritime Trade	Physical or produced capital as *Wc*
3	Infrastructure,	Natural capital as *Wn*
4	Energy,	Intellectual property as *Wi*
5	Tourism,	Social-institutional capital as *Ws*
6	Marine and Maritime Resource Governance	Net financial assets as *Wf*

3.0.Conclusion

The general Zanzibar blue economy policy objective targets optimizing national wealth resources which include oceans, seas and marine resources. The fisheries and aquaculture, maritime trade and infrastructure, energy, tourism and marine and maritime resources are the main social economic sectors, (Zanzibar Planning Commission 2020b). Through the implementation of this blue economy policy, Zanzibar has the opportunity to increase employment, improve the balance of trade, promote food and nutritional security and maintain environmental resilience.

The Blue Economy policy requires government ministries, departments, agencies and other social economic entities to be concerned with the level of success of each of the other social economic entities. All social economic entities have to share a common goal of achieving profitability, productivity and optimal cash flow for the entire sustainable social economic development processes, (Hritonenko and Yatsenko, 1999). It follows that national wealth resources management, implemented through social dynamic management, requires a new, operational and different perspective of relationship management, (Alain Martel and Walid Klibi, 2016).

The blue economy policy model concludes that in order to achieve the "transparent, equitable and optimal exploitation of all wealth resources to underpin broad-based sustainable growth and socio-economic development" the SIDS must take into account conditions articulated in above relations 1- 10, (Ivan, *et al*, 2014 and Uongozi Institute, 2017). Also, the ability to see beyond oceans, seas and boundaries permits recognition of serious global development markets and trade threats that lie elsewhere within the dynamic context as well as the chance to pursue opportunities that would otherwise be missed.

For example, the optimal wealth resource creation and utilization in the oceans, seas and marine resources in all *smallest island and most vulnerable nations* encourage expertise, specialization and all this implies for enhanced systems, sectors and relationship global good governance. Also, the blue economy policy model may pursue frontier-based economic

development which may be characterized by a pattern of increased capital investments, technological innovations and social and economic institutions dependent on ‘‘opening up’’ new frontiers of ocean resources once existing land and human resources may have been ‘‘limited’’ or / and exhausted, (Barbier, 2005).

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