



OCEANS AND SMALL ISLAND STATES: PROSPECTS FOR THE BLUE ECONOMY

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ABSTRACT

The concept of Blue economy is in its emerging phase and recognized as one of the mechanism for sustainable development. Possessing great opportunities, wise and sustainable exploitation of ocean and marine recourses, is foundation of the concept. Since island and coastal countries are fully dependent on oceans and marine recourses, the concept is very significant for their development. These small countries don't have such resources and knowledge that is required in pursuance of Blue Economy; therefore, despite the significance of blue economy for them they are unable to fully harness the potential of the concept for their development. Therefore, the paper tries to assess the prospects of the blue economy for SIDS. The paper sets out a background by providing a brief about the concept and SIDS concerns for understanding the challenges, they are confronted with, in pursuit of blue economy. The paper makes an attempt to assess major potential areas of SIDS, which can be developed under the umbrella of blue economy. It also suggests some generous solutions for their challenges and limitations.

Keywords- SIDS, Blue Economy, Sustainable Development

Introduction

Oceans cover 72 percent of earth surface and thus it is called Blue Planet. Oceans are of great importance not only for islands but the entire world as it facilitate 80 percent of global trade and offer livelihood options to huge global population. In the particular case of Island countries, oceans are integral aspect, as their existence is incomplete without them. Oceans are having huge significance in island economies by providing their livelihood and other development prospects. Marine and Coastal activities provides jobs and foods to millions of people living in islands and coastal countries. Recognizing the continual degrading state of ocean resources, during the last few years' debate has started over development of blue economy. The Blue Economy is a concept, which encourages an approach for sustainable utilization of marine resources. It focuses on various marine activities like shipping and maritime transportation, tourism, fishing and energy generation from tide, wind and marine biotechnology blue carbon trading and so on. This approach is considered to be very significant for island states, offering the prospect of sustainable, environment friendly and moreover socially inclusive economic growth.

Small island countries are recognized with some distinct characteristics and considered to be structurally weak and vulnerable. Such countries are categorized by the United Nations as a group called Small Island Developing States (SIDS). SIDS is a group of diverse countries, some of which are not small (e.g. Cuba and Papua New Guinea), not island (e.g. Belize, Guyana are low-lying coastal countries), not developing (e.g. Singapore) (Betzold, 2010). There are 51 countries in the group, which share some common characteristics and unique challenges for their development. At present SIDS are the most vulnerable and are in the frontline in the face of climate change and experiencing devastating impacts of climate change. Their economic activities and infrastructures are being continuously disrupted and destructed due to recurrent natural hazards. In this light, the concept of Blue economy seems very relevant for them. These small countries don't have such resources and knowledge that is required in pursuance of Blue Economy; therefore, despite the significance of blue economy for them they are unable to fully harness the potential of the concept for their development.

Since, SIDS are group of diverse countries having common concerns, the paper tries to assess the prospects of the blue economy for SIDS and sets out a background by providing a brief about the

concept and SIDS concerns for understanding the challenges, they are confronted with, in pursuit of blue economy. The paper makes an attempt to assess major potential areas of SIDS, which can be developed under the umbrella of blue economy. It also suggests some generous solutions for their challenges and limitations.

Blue Economy: As a Concept

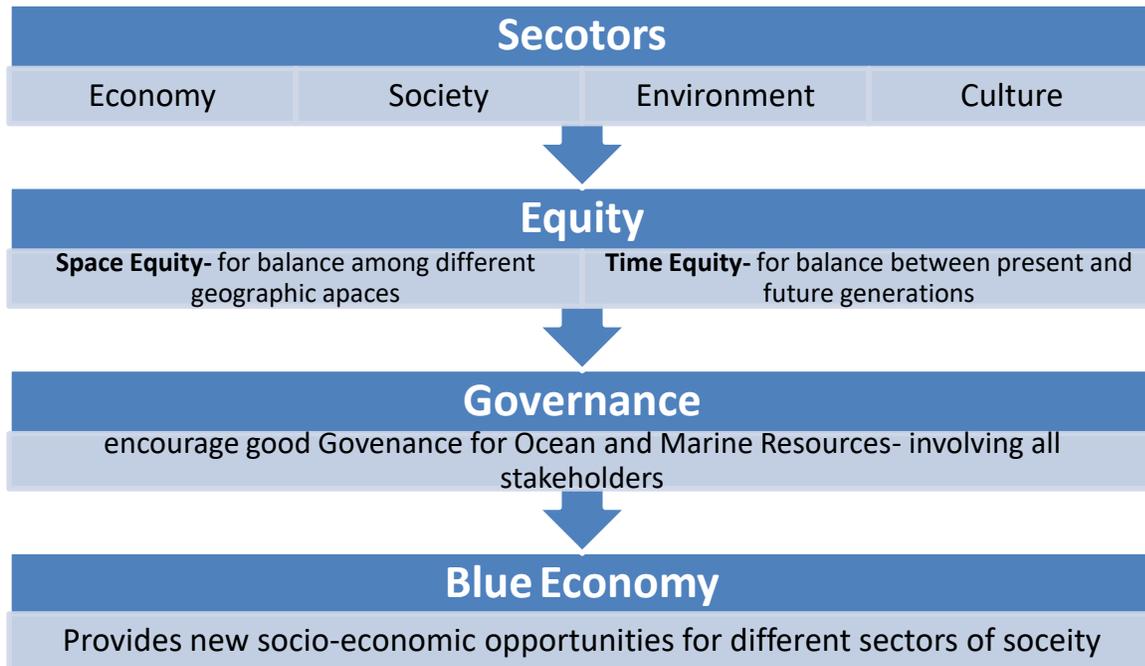
The term Blue Economy came into existence in 2010 with the release of book ‘the Blue Economy: 10 years-100 Innovations-100 million Jobs’ by Gunter Pauli and soon after gained attention throughout the world and considered as one of the major tools for sustainable development. Particularly in case of island states the Blue Economy provides huge opportunity for sustainable development by exploring marine resources for economic development while significantly reducing environmental risks and ecological scarcities. The significance of oceans for sustainable development was formally recognized by the international community during the Rio+20 Conference in 2012 and was first defined as “Blue economy refers to marine-based sustainable economic development which leads to improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities” (Rio+20, 2012). Also the concept of blue economy reflects in the Goal 14 of the UN’s Sustainable Development Goals (SDGs) adopted in 2014, which states: “Conserve and sustainably use the oceans, seas and marine resources for sustainable development...”. Subsequently, the concept was appreciated and taken up by many international organizations and countries.

As mentioned earlier, blue economy implies as sustainable development activities while preserving ocean resources in a sustainable manner. A sustainable ocean economy emerges when economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy (UNCTAD, 2014). Blue Economy as a concept is inclusive of all aspects of development and focuses on equity in terms of space and time.

Blue Economy covers all aspects of development i.e. economic, social, cultural and environmental aspects along with equity and good governance. As illustrated by the figure-1 that proper governance and execution of policies is important component of Blue Economy and it involves all stakeholders (including the civil societies) in decision making processes and in executing policies related to various concerns affecting the world’s oceans and coastal areas.

Good Governance also incorporates equity aspects- in terms of Space and time; the prior indicates equity among countries having access to marine resources and countries having facilities of research and development related marine resources. Therefore equity is an integral part of Blue economy, so that sustainable exploitation of marine resources may be ensured.

Figure 1 Components of Blue Economy



As a concept, Blue Economy looks forward to oceans for development and aims to promote sustainable and inclusive growth and job opportunities through various maritime activities. For this purpose the focus areas of blue economy are- fisheries and aquaculture, tourism, shipping and port development, mining for off shore Hydrocarbons and Seabed Minerals, marine biotechnology and research & development.

Uniqueness of Small Island States

As mentioned small islands, low-lying and coastal countries are altogether referred as SIDS according to United Nations and they face unique challenges in terms of their socio-economic development, which are now well recognized. SIDS are mainly located into three distinct geographic locations i.e. Pacific Ocean, Indian Ocean and Caribbean. Almost all island states share several common characteristics such as physical and structural developmental challenges

that include their geographic remoteness, small territories and small size of population (growing rapidly) and less human resources. Islands are based on a single or limited range of activities, such as tourism, fishing, particular cash crops etc., vulnerability of external disaster and difficulties to participate in international fora with a strong position (Bass and Clayton, 1995; Briguglio, 1995/ 2010/ 2014; Mimura *et al.*, 2007). These characteristics not only identify them as a distinct group but also mark their overall vulnerability. Those derive from high vulnerable island ecologies, economies and societies to external influences (Wong, 2011). According to McCarthy *et al.*, (2001) and UNFCCC (2005: 14) some of their specific characteristics are as follows-

- **Isolation** within and between the countries (in most cases) and great isolation vis-a-vis major global markets.
- **Limited physical size:** this is the main hindrance to several adaptation measures for sea-level rise and other impacts of climate change. For instance coastal retreat is impossible in some cases where entire islands may be inundated (Tompkins, *et al.*, 2005: 28);
- **Extreme exposure to external shocks:** vulnerable to tsunamis, tropical cyclones and related storm surges, volcanic eruptions and droughts;
- **Limited resource base and unsustainable utilisation:** many islands are already stressed to a great extent from human activities, which is unsustainable and resulting in degradation of natural systems for instance increasing population, pollution and industrial activities and resultant increasing nutrients flows caused damages to coastal ecosystems which would other than play a role as natural sea defences or storm protections and (Tompkins, *et al.*, 2005: 28);
- **Decreasing available fresh water and thin water** lenses leads to high sensitivity to sea-level change;
- **Low economic resilience:** dependence on import and extreme openness to external market make these islands exercise very little or no control;
- **Usually high population densities** and rapid population growth (in some cases) for example- Timor - Leste, Anguilla, Solomon Islands, Vanuatu (CIAC, 2012);
- Intra and inter-island migration, which leads to rapid changes in their social structures;

- **Inadequate infrastructural development** (except for major foreign exchange-earning sectors such as tourism);
- **Insufficient financial and human resources:** lack of skilled human and financial resources critically limits the adaptation capability of SIDS to the impacts of climate change.

In spite of all these common challenges for sustainable development, they vary greatly by their geographical, climatic, social, political, cultural, and physical characteristics and levels of economic development. The main cause of this diversity among SIDS is their different regional locations, which affect their specific characteristics and make them diverse. In addition to above mentioned challenges islands are also vulnerable and in the front lines to face the consequences of climate change, even for some islands like Fiji, Mauritius, Kiribati, it is an existential threat. Therefore, the blue economy presents them a great opportunity to harness their marine resources in a way, that they could reduce the impact of climate change and proceed for sustainable development.

Blue Economy in Island states

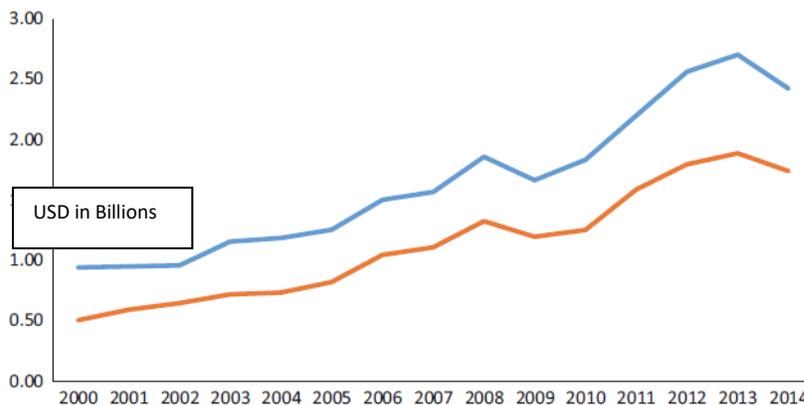
In the view of their structural weakness and increasing impacts of climate change for them, Small Island States are struggling for sustainable development. The concept of blue economy has grown significantly in recent years and reason for this, is its potential to deal their structural limitations and encourage sustainable development activities at different levels. Oceans and coastal areas are of great importance of small economies of island states as they hold huge resources with them and opens new avenues for economic activities i.e. fisheries, tourism, oil mining etc in a more systematic and sustainable manner. Another important aspect which signifies blue economy for small island states is, their maritime space constitutes a larger geographic area than their main land, for example The Bahamas is having land territory of 5,383 square miles whereas is estimated to have 242,970 square miles as its Exclusive Economic Zones (EEZs). Similarly, St Vincent and the Grenadines' is having EEZs of around 13,900 square miles which is more than 90 times its land territory. In another case of St Kitts and Nevis, the land area of only 100 square miles and its ocean space is estimated to about 7,900 square miles (Commonwealth Secretariat, 2016).

As mentioned economies of small states is dependent on activities related to directly or indirectly to oceans. Some of that comes under blue economy like fishing, tourism and maritime transports. Other components like marine bio-technology and high-tech marine products and services, small states need to explore to pursue for blue economy.

Fisheries

Fisheries are an important focus area under blue economy in most small states. Fish is considered to be a major source of nutrition throughout the world and an important part of SIDS economy. In the year 2015, the global export of fish and related products was around US\$143 billion, which shows an 8 per cent increase from 2014. Whereas total exports from SIDS was around US\$1.7 billion, which is just over 1 per cent of global export of fish and related products. However, fisheries account for 3 per cent of GDP in SIDS, but for some small states this figure can increase to more than 10 per cent (UNCTAD, 2016). There is regional variation in fish export among SIDS like four of the top five countries are from African region- Namibia, Mauritius, Seychelles and Maldives and bottom five are from Caribbean region. Figure 2 shows that revenue from exports has been slightly increasing upto 2009-10 but during 2012-14, it plateaued as a result of fluctuations in exports (UNCTAD, 2016).

Figure 2 Total Export of Fish and Related Products USD Billion



Source- adopted from UNCTAD, 2016

Further, as a source of nutrition and as main contribution to national income, the importance of fisheries sector is projected to continue and increase in future. Considering increased global demand for fisheries products and SIDS capacity to produce and export, they have the potential to develop this sector of blue economy. For example, the given potential of large EEZs of pacific

island they contribute around 30-80 per cent to their GDP from export of Fisheries products (Ababouch, 2015). However, realizing this, they will need a regulatory policy and facilitating mechanism that ensures sustainable harvesting of their regional and local fish stocks (UNCTAD, 2014).

Maritime Transport

Maritime transport is another component of Blue Economy and as around 50 per cent of the global population and major industrial and large cities are located in coastal regions, it is one of the major revenue generating sectors in coastal and island countries. Maritime transport facilitates approximately 90 per cent of the global trade and provides easy transport links for goods and people. Islands have close proximity to coasts thus they have easy access to international markets. Global maritime transport increased by 3.2 per cent in 2014 with more than 9.84 billion tons from 2013 and was predicted to continue moderate increase in near futures as well (UNCTAD, 2016). Therefore, maritime transports also have huge potential to contribute in small states economies, given their exposure to international market. A large number of ships from developing world have registered their vessels in these small countries. In case of registration of vessels, open registries may improve revenue of hosting country and reduce red tape and costs for ship owners. As shown in Table 1, the registration is led by Caribbean small states (UNCTAD 2016; Roberts, 2015).

Though the contribution of maritime transport to islands' economies is significant, but having potential to contribute in economic growth it remains underexploited.

Table-1 Small Island States' merchant fleets by flag of registration

Countries	2011	2012	2013	2014	2015
The Bahamas	1.407	1.431	1.436	1.422	1.421
Antigua & Barbuda	1.193	1.295	1.280	1.235	1.174
St. Vincent & the Grenadines	1.053	1.000	980	990	963
Belize	860	748	758	771	765
Vanuatu	383	430	433	439	442
St. Kitts & Nevis	309	257	266	277	299
Tuvalu	212	182	194	207	228
World	83.283	84.709	86.484	87.926	89.464

Source- Commonwealth Secretariat, (2016: 27).

Tourism

Blue Economy encourages marine and coastal tourism. Tourism is a key sector for economic growth and national development plans in small island states. Islands have recorded a remarkable increase in tourism with a rate of 9 per cent (around 19 million) during 2014-15, which is 5 percent more than of previous year of global tourism growth. For island countries, tourism is the main source for hard currency and in 2014 total income from this sector increased from 29 to 34 percent. Though, this is an important sector for revenue generation in these countries, it often experience fluctuations in the revenue generation as tourism sector is confronted with challenges from climate change and other socio-economic crisis. For examples Caribbean countries experienced a decline in tourism revenue due to their financial crisis, and now it recovered to 41 per cent share of tourism in its revenue (World Bank, 2016). Cruise tourism is another growing aspect in the sector and has been characterized by high volume with low value. For example, in Caribbean region in 2013 the average revenue from tourism in the region was estimated to USD 1,284 compared to USD 1,522 for the Pacific Islands (World Bank, 2016). Significantly, the global tourism sector reached USD 475 Million in 2012, with an increase of 44 per cent from 2011. This also indicates the potential of the sector in terms of Blue Economy for small islands (UNCTAD, 2014). However, climate change along with pollution and sea level rise having long-term threat to coastal areas and ecosystem, adds to the existing challenges for small island states to explore the sector to pursue for Blue Economy.

Potential areas for SIDS

The concept of Blue Economy is evolving and its scope for Island states lies with various activities like (i) which explore and develop ocean resources; (ii) which use ocean space; (iii) which protect the ocean environment; (iv) which use ocean products as a main input; and (v) which provide goods and services to support ocean activities. Additionally, there are other areas as well having potential to contribute in SIDS efforts for Blue economy:

Ocean-Based Renewable Energy-

Oceans have huge potential to generate renewable energy, which can be obtained by harnessing sea waves, tidal waves, thermal conversion and offshore wind energy. Considering impacts of climate change, global demand for renewable energy is expected to increase in near future. Now

small island states are also moving towards renewable energy as their priority and looking forward to oceans for energy generation. Ocean energy will also protect them from international fuel price fluctuation thus make them self reliant in energy production.

Despite huge potential for generating ocean energy, many small islands are confronted with physical constraints and lack of investment. For example, in the Caribbean Region, given its high population density, offshore wind farms have the potential as energy source, but considerable decrease within a short distance from the coast has restrained farm development (Atherley Ikechi, 2016). According to a study conducted in the six pacific islands, though, waves in the region have the greatest potential to develop energy, but presently they have weak financial resources and capacity to adopt and sustain energy conversion technologies (South Pacific Applied Geoscience Commission [SOPAC] 2009). Ocean based energy recourses are still emerging and there are many pilot projects being conducted to test their viability in small island states. If explored adequately the sector can contribute significantly without much investment.

Aquaculture-

As discussed earlier, small island states have the potential to increase their fish production depending on the global demand; as proposed global fish supply is likely to reach 190 million tonnes in 2030 (an increase of 36 million tonnes from 2011) (FAO, 2017). This amount of fisheries will probably occur in the ocean, providing opportunity of small island states to grow their aquaculture sector in pursuance of Blue Economy.

However, many island countries are having many limitations, which affect developmental prospects of aquaculture sector. For example- they have limited scope for starting new activities as mostly coastal areas are overpopulated and have multiple-user. In addition, coastal areas are also confronted with many of environmental challenges i.e. increasing and intense extreme events, increasing discharges of nutrients and pollution in coastal water, and the threat habitat damage during the development of aquaculture sites. They need to develop stringent policy framework and monitor it often to develop the sector.

Table 2-Established and Emerging Ocean Based Activities

Established	Emerging
Capture Fisheries	Marine Aquaculture
Seafood Processing	Deep and ultra deep water oil and gas
Shipping	Offshore Wind Energy
Ports	Ocean Renewable Energy
Shipbuilding and Repair	Marine and Seabed mining
Offshore oil and gas (shallow water)	Marine safety and surveillance
Marine Manufacturing and Construction	Marine Biotechnology
Maritime Coastal tourism	High Tech marine products and services
Marine Business services	Others
Marine R&D and education	
Dredging	

Source- OECD, 2016

Marine Biotechnology-

Marine Biotechnology holds another scope for small states in reference to Blue Economy, as it includes all those activities, which uses marine living organisms for industrial and other purpose, such as the synthesis of novel chemical compounds or exploitation of pharmacological properties (Hunt and Vincent, 2006). Marine biotechnology has the potential to deal with many global challenges by contributing to human health, sustainable food and energy supplies and environmental remediation; in addition to these, it can also significantly contribute in many industrial sectors in an environmental friendly and sustainable manner.

Moreover, marine bio-technology also provides essential eco-system services for earth and its inhabitants. Apart from this natural service, marine bio-technology is growing as an industry throughout the world. The reasons are that many marine microbes are demonstrated to be a rich novel source of potential drugs, enzymes and polymers and have potential to contribute in energy needs of the countries as well. Globally, billions of dollars have been invested into alga-culture or algal farming within last few years. These marine resources are found within EEZ of a country, but since EEZ of Small island states are overlapping, they are subject to national jurisdictions, including Access and Benefit Sharing (ABS) laws.

Though some SIDS are having ABS laws for genetic resources, which help them to regulate bio-prospecting activities and ensure that they benefit from any discoveries. This is very crucial for SIDS, as they rely on foreign firms and international technology to exploit these resources (UNCTAD, 2014). Strengthening their regulatory frameworks, and introducing ABS laws, will be key if SIDS are to share their benefits and ensure long-term environmental and resource sustainability.

Climate Change Mitigation - Blue Carbon

As mentioned earlier that small island states are in the frontline to face the consequences of climate change, therefore they are in the urgent need to mitigate the impacts. Small islands and coastal countries are rich in biodiversity and natural flora, which is considered to be of help to deal with climate change impacts. Recognizing the importance of coastal ecosystems such as mangroves and sea-grass meadows for trapping and storing huge amount of carbon, Small Island are provided with new avenues to explore for climate change adaptation and mitigation actions (Commonwealth Secretariat 2013).

Ecosystem in Small Islands and coastal countries are widely known for their essential services to humanity, in addition they also work as protection from tsunamis and coastal erosion etc. Today, the international communities have recognized the value of carbon sinks as a natural capital and one of the essential elements for coastal and island states for building a successful green economy. Therefore, to conserve such ecosystems and habitats is very crucial for SIDS in pursuit of blue economy. For this purpose SIDS need to develop new carbon markets, create new investment opportunities and jobs, which can deliver on conservation targets. Ecosystem-based mitigation activities and techniques that recognize the worth of coastal ecosystems as carbon sink or carbon trade also fit well for dealing with climate change. The only need is to form adequate policies, proper and strict legislation and decision making process.

Challenges for Blue economy in SIDS

Though the concept of Blue economy posses a huge potential for development of Small Island states but the efforts to develop the blue economy are restricted by a number of challenges. Majority of the challenges are directly or indirectly associated with human activities, as marine resources has always been considered as limitless resource and now the world in witnessing the

consequence of this approach. The limited coasted interface of small island states is being affected by numerous factors including impacts of climate change. Major factors are increasing demand of marine product, inadequate monetary incentives, inadequate capacity and technological advances, inappropriate implementation of UNCLOS and other mechanisms, and poor management, which often lead to unregulated and unsustainable activities. Consequently, degradation of coastal areas and marine resources is driven by unsustainable overexploitation. The major challenges may be described as-

- (i) Increasing demand, poor management and unsustainable extraction of marine resources and fishes due to technological advancement. According to a study by FAO around 57 per cent of fish stocks are fully exploited and around 30 per cent are over exploited and depleted (FAO, 2016). In addition, fish stocks are also illegally exploited which is unreported and unregulated. Illegally fishing accounted for around 11-26 million tonnes annually to estimated to approximately 10-22 billion US dollar in undocumented revenue.
- (ii) Agriculture runoff, excess nutrients from untreated sewage marine wastes such as plastics contribute to increasing marine pollution and thus resulting in degrading marine ecosystem.
- (iii) For small island countries, their EEZ are very crucial for their economies and development, in which they exercise their sovereign right and utilise the marine resources. This is more relevant in case of such states where EEZ encompass more space than their land area (In Tuvalu, for instance, the EEZ is more than 26,000 times the size of the land mass), they face difficulty to exercise their administrative laws. Therefore, unfair trade is another challenge for small island states.
- (iv) Physical alteration and destruction of coastal and marine ecosystem and habitats due to increased destructive activities like mining, deforestation and coastal tourism. Coastal erosion due to physical reasons and unplanned/unregulated development in the narrow coasts or near shore areas has led to sub-optimal infrastructure, overlapping and overexploitation of marine and land resources, loss or degradation of

critical biodiversity and habitats, marginalization of poor communities living in the area.

- (v) At present, impacts of climate change also poses various challenges for small island states pursuing for Blue Economy. For example, more frequent and intense weather events- i.e. tsunamis, cyclones, variation in normal weather and slow-onset events like sea-level rise etc. The long-term climate change impacts on ocean systems include changes in ocean temperature, acidity, and major oceanic currents that threaten marine biodiversity and their habitats and thus the coastal communities that depend on them.

Although, a large investments and a range of actors involved, present efforts to deal with these challenges seems to have a very little impacts with no comprehensive strategy or planning, for instance divergent planning and attempts are involved in various sectors like fisheries governance, marine garbage efforts, improving infrastructure on ports etc. Though, some sector manages well its activities and achieves success from strengthen policies, often undermined by results of different sectoral policies such as support to poor coastal fishermen tend to be undermined by bad-sited aquaculture farms or ports or unsustainable and unregulated tourism activities (UNCTAD, 2014). In addition to these, pollutants from river along with agricultural waste have serious impacts on fisheries and coastal ecosystems by degrading spawning and feeding habitat. For example, loss of mangroves forests, threatens profits from seafood harvesting, that is accounted for more than 4 billion US Dollar per year; in Belize, on an average mangrove rich areas produce more than 71 per cent fish than areas with few mangroves (UNCTAD, 2014).

Conclusion

The blue economy provides huge opportunity for development of SIDS and other coastal countries by creating new avenues for various economic activities and jobs. At the same time these small and vulnerable countries are confronted with different levels of socio-economic and legal constraints as their challenges. the major threat for developing a blue economy in SIDS are poverty and the degradation of ocean resources either from natural causes e.g. variation in normal weather, climate change and natural disasters or from human activities e.g. unsustainable

and over exploitation or oil spills etc. These challenges restrain them from executing sustainable development practices. SIDS often lacks the technical, institutional, technological, and financial capacities to benefit to the fullest from their marine resources; this need to be addressed in order to achieve economic diversification, job creation, poverty reduction, and economic development in SIDS and coastal countries under Blue Economy. In this view, global and regional partnerships can be an important mechanism for enhancing capacity of such poor countries. Though in various sectors like fisheries, maritime transport and tourism, regional or global partnerships already exist, SIDS need to join hands with other countries for new technology and research and development for emerging sectors of blue economy such as marine biotechnology and renewable ocean energy. Growth in the blue economy will require an appropriately skilled workforce and the promotion of science, technology, innovation, and multidisciplinary research. Realizing the full potential of the blue economy also requires the effective inclusion of all societal groups, especially women, young people, local communities, indigenous peoples, and marginalized or under-represented groups (UNECA, 2016).

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