The Commonwealth

Small States Digest

Issue 1 \ 2016

The Blue Economy in Small States

CONTENTS

What are small states?

The Commonwealth defines small states as sovereign states with a population size of 1.5 million people or less. Larger member countries – Botswana, Jamaica, Lesotho, Namibia and Papua New Guinea – are designated as small states because they share many characteristics of small states. Thirty-one of the fifty-three member countries of the Commonwealth are small states.

Africa

Botswana, Lesotho, Mauritius, Namibia, Seychelles, Swaziland

Asia

Brunei Darussalam, Maldives

The Caribbean

Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, St Kitts and Nevis, St Vincent and the Grenadines, Trinidad and Tobago

Europe

Cyprus, Malta

The Pacific

Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu

Call for papers and articles

Policy-makers at the national, regional and international levels, as well as academic researchers, are invited to contribute their views and perspectives to this quarterly publication, which focuses on the opportunities and challenges faced by small states in the global economy.

Synopses of policy research papers and analytical or descriptive reports on small states issues should be submitted to the Commissioning Editors as soon as possible for the next issue. Topics can cover international finance and capital markets, international trade, the environment, natural disasters, macroeconomic management, and economic and social development. **Submissions should not exceed 1,500 words**.

Reader feedback, publication announcements and notices of upcoming events should reach the Commissioning Editor two weeks ahead of publication.

Commissioning Editors: Denny Lewis-Bynoe and Wonderful Hope Khonje

Climate Finance and Small States, Economic Policy Division

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Abstract

The 'blue economy' is an evolving concept that recognises the need to maximise the enormous economic potential of oceans while preserving it for future generations. Although the idea of using oceans for economic gain is hardly new, the growing appreciation of the critical role that oceans play in sustainable economic growth and, as a corollary, the need to better manage and protect the ecosystems and resources that are the fundamental basis for that growth is a recent development.[1] This new approach aims to sustainably scale up traditional uses of oceans and develop new sectors, using the latest technologies and steered by new, enabling public policies.

While all coastal nations have for centuries benefited from ocean resources, small island states are particularly dependent on the wealth of resources that oceans provide and the many essential aspects of the global economy that they support. These countries typically have jurisdiction over significant ocean areas, containing a diverse range of habitats, species and economically valuable resources, which far exceed their terrestrial footprints. Access to living and non-living marine resources will therefore play a critical role in these countries, shaping their economic and social development. These resources include a wide range of maritime sectors essential to both current and future economic development, such as tourism, capture fisheries,[2] shipping, ocean-based renewable energy sources, biotechnology and ports, as well as the marine ecosystems and resources that support them.

Increasingly, small states are embracing the blue economy as a mechanism for realising sustainable growth. It presents a promising avenue for small states to overcome some of their inherent economic challenges, by developing blue businesses, increasing economic diversification and realising growth embedded in the fundamental principles of environmental sustainability. With recent advances in technology, potential blue economy growth areas for small states have increased and now include aquaculture, ocean-based renewable energy and marine biotechnology.

Some of these countries are also highly vulnerable to extreme weather patterns and climate change, with many only a few metres above sea level and facing natural hazards. Pursuing a blue economy development approach provides an opportunity for countries to holistically consider environmental sustainability and economic growth in the utilisation of ocean resources and to build resilience. Effective implementation however, requires a number of essential conditions to be in place, most importantly an integrated international legal framework; maritime surveillance, monitoring and enforcement; adequate infrastructure; and a comprehensive strategy for managing marine resources.

This paper examines the requirements for small states to effectively pursue a blue economy development approach, beginning with an analysis of the current literature. In Sections 1 and 2, we explore key sectors of the blue economy and their potential for catalysing blue growth. In particular, we examine the experiences of small states in implementing the blue economy across key existing sectors – fishing, tourism and maritime transport – and emerging sectors – aquaculture, ocean-based renewable energy, marine biotechnology and blue carbon opportunities – that could spur economic growth and diversification and help to build resilience in the future. In Section 3, the key enabling factors necessary to fully realise a blue economy are discussed, before conclusions are drawn in Section 4.

Acronyms

ABS	access and benefit sharing
EEZs	exclusive economic zones
EIU	Economist Intelligence Unit
GDP	gross domestic product
OECD	The Organisation for Economic Co-operation and Development
PNA	Pacific Nauru Agreement
SIDS	small island developing states
SMEs	small and medium-sized enterprises
SOPAC	Pacific Islands Applied Geoscience Commission
UNCTAD	United Nations Conference on Trade and Development
VDS	Vessel Day Scheme
WWF	The World Wide Fund for Nature
UNECA	The United Nations Economic Commission for Africa

1. The Blue Economy Concept

By Julian Roberts and Ahmed Ali[3]

1.1 Defining the blue economy

The term 'blue economy' was first coined by representatives of small island developing states (SIDS) and other coastal countries during the 2012 Rio Summit. Although there is no consensus on a single definition, there is general agreement that it is derived from the green economy concept[4] and has the same desired outcome: increasing human wellbeing and social equity using available natural resources, while significantly reducing environmental risks and ecological scarcities (UNCTAD, 2014a). One general interpretation of the benefits of developing the blue economy is that it can enable a country to maximise the economic value of its marine environment in a sustainable manner that preserves and protects ocean resources and ecosystems for future generations. By that definition, the blue economy can be broadly interpreted as including economic activity that directly or indirectly uses the sea as an input (Morrissey et al., 2010).

More specifically, the blue economy concept stems from the realisation that oceans, if sustainably utilised, can play an increasing economic role in the coming century. The drivers of this are many, but they include an increased familiarity with the ocean environment; new technologies that enable the exploitation of ocean resources; the search for new sources of food and energy, partly driven by global demographic trends; and increasing recognition of the importance of aligning future economic growth with maintaining or even restoring ocean health (EIU, 2015). Since a large proportion of marine resources is believed to have remained untapped or unexplored in different marine zones of the world, there is a widespread conviction that future growth will be contingent on the efficient utilisation of those rich ocean resources.

For small island states, endowed with vast ocean territories, and exclusive economic zones (EEZs) larger than their land territories, sustainable harvesting of marine resources has the potential to drive inclusive economic growth in the future. Their high EEZ per capita mean that the blue economy offers the prospect of sustainable environmentally sound, socially inclusive blue economic growth.

1.2 The blue economy sectors

The sectors of the blue economy are either directly or indirectly dependent on ocean resources. As shown in Table 1.1 below, these include traditionally exploited marine resources – whether living resources (fisheries) or non-living resources (oil, gas and marine manufacturing and construction) – as well as the use of oceans for tourism, education and maritime transport.

Table 1.1 Established and emerging blue economy sectors[5]

Established	Emerging
Capture fisheries and seafood processing	Marine aquaculture
Shipping and ports	Deep-water and ultra-deep-water oil and gas
Shipbuilding and repair	Offshore wind energy
Offshore oil and gas (shallow water)	Ocean renewable energy
Marine manufacturing and construction	Marine and seabed mining
Maritime and coastal tourism	Maritime safety and surveillance
Marine business services	Marine biotechnology
Marine research &development and education	High-tech marine products and services
Dredging	Others

Source: (OECD, 2016)

Estimates of the annual global economic output of oceans vary, but the conservative estimate is US$2.4 trillion dollars. As shown in Infographic 1, traditional direct benefits (e.g. fishing and aquaculture) and services (tourism, education, etc.) account for US$400 billion and US$365 billion annually, respectively. These figures are dwarfed by trade and shipping, which account for US$700 billion, and emerging adjacent benefits such as biotechnology and sequestration, which totalled US$890 billion dollars annually (WWF, 2015a). In 2015, ocean economic output accounted for roughly 3 per cent of global gross domestic product (GDP).

Globally, around 3 billion people obtain at least 20 per cent of their animal protein from fish, and 1 billion of those people depend on fish as their primary source of protein. Furthermore, approximately 350 million jobs are linked to oceans through fishing, aquaculture, coastal and marine tourism, and research activities (UNCTAD, 2014a). These sectors, along with the other blue economy sectors, are expected to grow significantly in the coming decades. For example, global tourism,[6] marine aquaculture, shipping and offshore fossil fuel extraction are sectors whose value is expected to double and in some cases triple by 2030 (WWF, 2015a).

As well as these direct economic contributions, oceans enable the provision of a broader range of essential services to human communities, services that support economic wellbeing and human health. These include provision of food and raw materials; provision of regulating and supporting functions such as flood control and coastline protection, waste management, water balance, climate regulation and other processes; and benefits arising from cultural and amenity values.

For these reasons, coastal and island nations, both large and small, are looking to their marine waters to bolster slowing growth in their terrestrial economies by exploring new opportunities for investment and employment (EIU, 2015). However, although the economic contribution of oceans is significant, it remains undervalued. Measuring the ocean economy can provide countries with an improved understanding of the economic importance of their seas. To this end, many countries have created estimates of and released accounts for their ocean economy or ocean industries. According to Park et al. (2014), research conducted by countries around the world suggests that the ocean economy or ocean industries can produce between 1% and 5% of national GDP. As technology improves, our knowledge of deeper offshore waters and our capacity to access them will also improve, presenting a number of new opportunities to utilise ocean resources. This accounts for the current interest in deep seabed minerals, ocean energy production and marine genetic resources with medical, pharmaceutical and industrial benefits.

1.3 Growing the blue economy

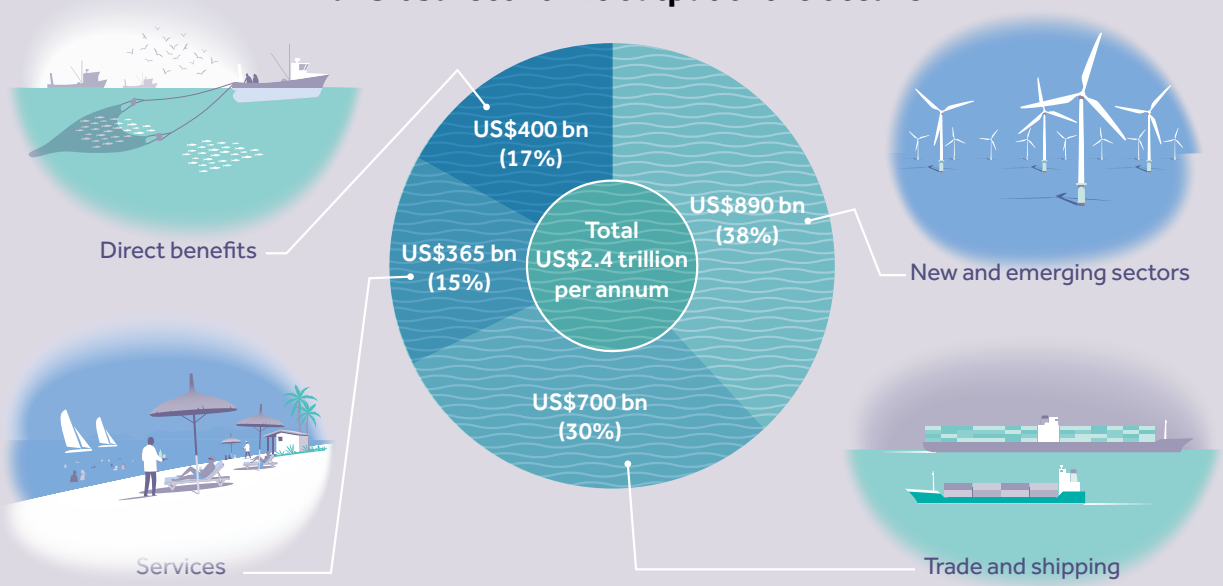
The scope of the blue economy varies based on the sectors considered. There are the economic sectors that use oceans and inland waters such as fisheries, aquaculture, tourism, shipping, biotechnology, maritime security, mining, oil and gas, and renewable energy. These have a direct impact on the aquatic ecosystems and the fauna and flora that are sustained by those ecosystems. The aim of an overarching blue economy framework should therefore be to assess ways and means of mitigating the cumulative impact of these economic sectors on living marine resources and ecosystem services and of ensuring that development of resources is done with a view to minimising potential negative impacts. In numerous coastal developing countries, including several small states, blue economy frameworks have been adopted to promote food security and decent livelihoods.

Such approaches generally cover the traditional ocean-based sectors, such as fisheries, aquaculture, ecosystem services, and marine and coastal tourism, with the potential for the future integration of other important sectors as appropriate (Ababouch, 2015).

The challenge is in understanding where to start in order to change course and achieve a blue economy, and in so doing to develop or strengthen social, economic and environmental linkages and reform current governance arrangements. This will require a paradigm shift and fundamental changes in the way the ocean is managed at national, regional and global levels to create a more harmonised and integrated approach.

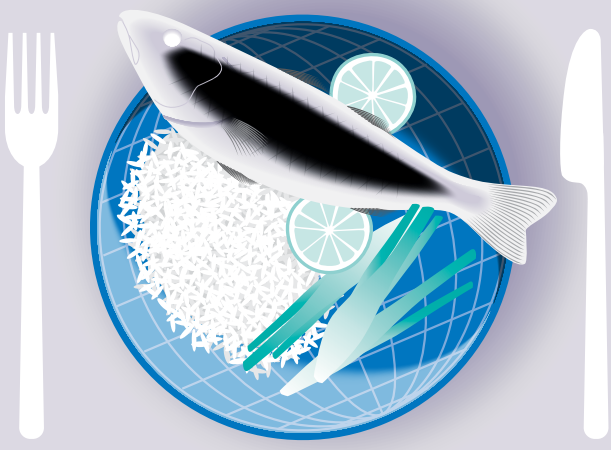
Although it is clearly recognised that the ocean offers further potential for economic benefits – both from living and non-living resources – it is not always clear what a sustainable ocean economy should look like, and under what conditions it is most likely

1a. Global economic output of the oceans



1b. Ocean-related employment

1c. The ocean as a primary food source



Over 1 billion people depend on fish as their primary source of protein

Source:
Author's calculation based on UNCTAD (2014a) and WWF 2015b

Box 1.1 Seychelles' blue economy strategy

Seychelles is a pioneer in developing the blue economy concept and has championed the principles of sustainable development and protection of the ocean and ocean resources in international forums. The government recognises that, with the country's vast EEZ of 514,274 million sq mi, a blue economy-centred development approach can be the foundation for economic diversification and growth.

In early 2015, a government restructuring resulted in the establishment of a blue economy department in the Ministry of Finance and Trade. This department is tasked with the effective coordination of oceans and marine-related initiatives, and with developing a strategy to mainstream the blue economy into existing and future national government plans. The country is currently undertaking a full marine spatial plan of its EEZ to ascertain what its ocean resources are.

Source: Sea Around Us and Purvis (2015)

to develop (EIU, 2015). To achieve such an economy, it will be important to optimise economic returns from existing sectors and resource utilisation, and to develop new blue economy sectors.

The list of sectors relevant to the blue economy is long (Table 1.1), and the potential of oceans is manifold and complex. The potential exists to more effectively exploit many of the existing resources and to optimise returns from existing activities. Opportunities to further develop and utilise existing sectors as a means of creating jobs and to increase the value of those sectors therefore need to be assessed in the context of the blue economy.

Many of the economic activities listed in Table 1.1 can be linked to both upstream and downstream activities through value chains. For example, fishing-related economic activities, as shown in Infographic 2 below, will be linked to upstream value chains such as suppliers of equipment and resources, who may also have their own suppliers. Downstream services include processing sectors and, subsequently, distribution and sales.

It is important to consider these value chains in the context of the blue economy, since large proportions of the economic activities in question take place not in the core blue economy sectors themselves but in adjacent economic sectors. For example, in maritime transport the actual shipping is the visualisation of the economic activity, but large amounts of added value are created in seaports and associated services, as well as in shipyards and other supply industry activities required for shipping. Similarly, for capture fisheries, opportunities exist to extend the value chain with both upstream activities (e.g. vessel support services) and downstream activities (e.g. processing whole fish into higher value products). The extent to which the value chain can be extended will ultimately determine the total value that can be realised from a single maritime function or resource.

The activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services and can be contained within a single geographical location or spread over wider areas. Value chains can also be seen as a vehicle through which new forms of production, technologies, logistics, labour processes, and organisational relations and networks can be introduced. The value chain thus acts as a value multiplier that can significantly increase the overall value of the blue economy without significantly increasing pressure on natural resources.

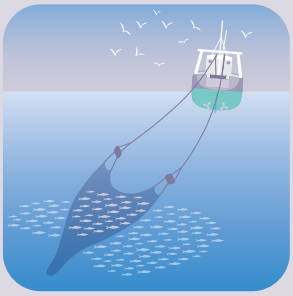
In terms of future uses of the ocean, a number of new and emerging opportunities have been identified that can contribute to the development of the blue economy. Among these emerging opportunities having potential, and particularly strong potential in SIDS, are fish farming (aquaculture), ocean-based renewable energy, ocean-related tourism and marine biotechnology. We provide a summary of the current status of these emerging sectors in Section 2.2.

2. Capture fisheries value chains

UPSTREAM

1. Fleet support services
- Maintenance
- Supplies
- Logistics

CORE



2. Production/capture
- Wild capture
- Mariculture

3. Collection from first producer point
- Landing fees
- Storage

DOWNSTREAM

4. Value-added products
- High-value product
- Waste conversion

5. Distribution and sales
- Distribution and logistics
- Large-scale buyers
- Consumers

2. The Blue Economy in Small States

Small states are primarily located in the Caribbean Sea and in the Pacific and Indian Oceans, and they face unique challenges, some of which are inherent in their small size and geographical locations. The economic costs of being small manifest themselves in a number of ways, including small domestic markets and limited export volumes. Their small size also restricts the number of activities they can engage in, limiting economic diversification and returns to scale in both the public and private sectors (Easterly and Kraay, 2000; Briguglio, 2014).

The location of small states also present a number of challenges. Many are isolated from major markets and trading hubs, and have higher transportation, freight and communications costs. For example, between 2004 and 2013 average expenditure by small states on international transport costs as a proportion of the value of their imports was about 10 per cent, which is nearly two percentage points higher than the world average of 8.1 per cent (UNCTAD, 2014b). Small states are also highly vulnerable to climate change, which is an existential threat in some of these countries, with many of them only a few metres above sea level and facing natural hazards and extreme weather events that can sometimes set back development by a generation. They also face a challenging development finance context. Some of these challenges were highlighted in the Addis Ababa Action Agenda document, including limited domestic resources, low tax potential, low savings rates, limited tax capacity and high debt ratios (UN, 2015a).[7] These challenges – size, low economies of scale, climate change, remoteness, limited funding and natural resources – constrain the capacity of small states to realise sustainable development.

Oceans and their vast economic resources present new avenues for small states to realise sustainable economic development. These countries typically have maritime space – including an extensive EEZ – that is much larger in area than their land territory. For example, the EEZ of the Bahamas is estimated to be 242,970 sq mi, compared with its land area of 5,383 sq mi, whereas St Vincent and the Grenadines' EEZ is estimated to be about 13,900 sq mi, over 90 times its land area. In the case of St Kitts and Nevis, the country's ocean space is almost 7,900 sq mi, with a land area of only 100 sq mi. Figure 2.1 shows the ratio of EEZ in square miles to that of land territory for Commonwealth small states. On average, for every square mile of land territory, these countries have 10 sq mi of EEZ. This is significantly higher than the average for other low-income (0.66 sq mi) and middle-income (0.82 sq mi) coastal countries, underscoring the significance of the blue economy for Commonwealth small states.

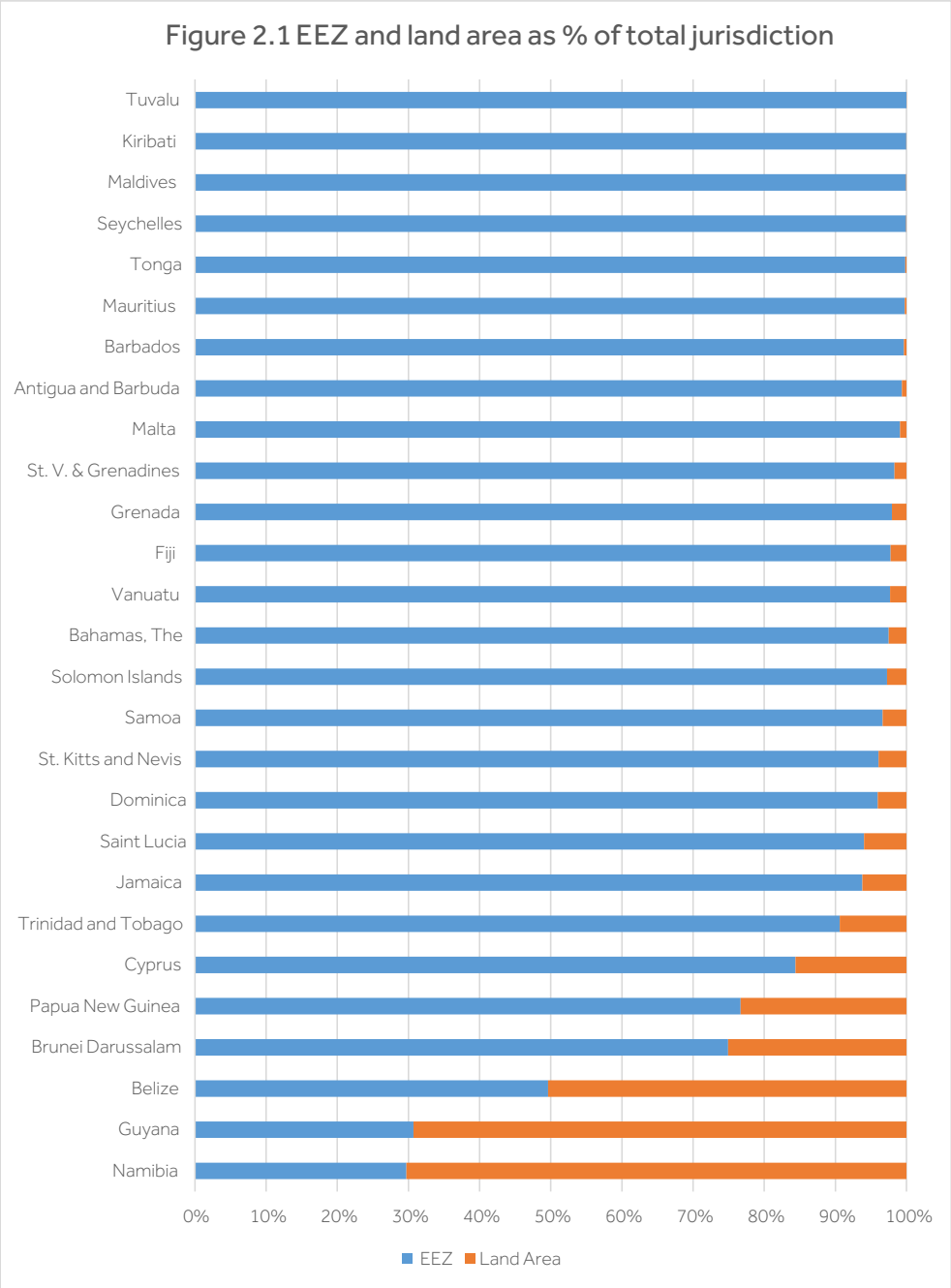
The Commonwealth is currently supporting a number of small states in assessing the full economic potential of their ocean resources and

Box 2.1 Profile of Mauritius's blue economy

In 2012, the output of Mauritius's ocean economy was estimated at MUR32.5 billion, accounting for 10.8 per cent of GDP.

Three sectors (coastal tourism and marine leisure, seaport-related activities, and seafood-related activities) constitute about 90 per cent of the ocean economy in Mauritius. In terms of sectoral share, coastal hotels and marine leisure is the largest sector, accounting for 60.1 per cent of blue economy output; this is followed by seaport-related activities (18 per cent), fisheries and seafood processing (13.2 per cent), and others (8.7 per cent). Forecasts suggest enormous potential for growth in most of these blue economy sectors.

Source: Mohanty et al. (2015)



Source: authors' calculations based on WDI, *Sea Around Us*, accessed May 2016

developing holistic blue economy development plans. The traditional established sectors – fishing, maritime transport and coastal tourism – play a critical role in these countries, but there are a number of emerging blue growth sectors, including aquaculture, ocean-based renewable energy, biotechnology and blue carbon opportunities. These sectors, existing and emerging, are discussed below.

2.1 Existing blue economy sectors

2.1.1 Fishing

Fish and fish products are an important sector of the blue economy in most small states. Fishing is a key source of nutrition, employment and export receipts, and is essential for the economic survival of many small states. Total global exports of fish and fishing products in 2015 were estimated at just under US$14 billion, an 8 per cent increase on the previous year. Exports from SIDS dropped slightly in

2014, to US$1.7 billion, and, as shown in Figure 2.2, the drop was slightly steeper in Commonwealth small states.[8] As a percentage of total global exports of fish and fish products, SIDS produce only just over 1 per cent. However, the sector contributes around 3 per cent (on average) of the GDP of SIDS, rising to more than 10 per cent in some small states (UNCTADstat, 2016).

There is a regional variation between countries: four of the top five exporting Commonwealth small states[9] are in Africa and Asia – Namibia, Mauritius, Seychelles and Maldives – whereas the bottom five are from the Caribbean. Export revenues from fish products have increased steadily for the top five Commonwealth small states but plateaued after 2012; in contrast, exports from countries at the lower end of the scale have been characterised by sharp fluctuations (UNCTADstat, 2016).

The importance of fish and fish products to small states, both as a source of protein and in terms of the sector's contribution to GDP, is likely to continue. However, based on their assessed capacity and increasing global demand for fish products, small states have the potential to further develop and grow this sector of the blue economy. To fully realise this, however, they will need to create an enabling policy and regulatory environment that ensures domestic firms participate in the sustainable harvesting of local and regional fish stocks (UNCTAD, 2014a).

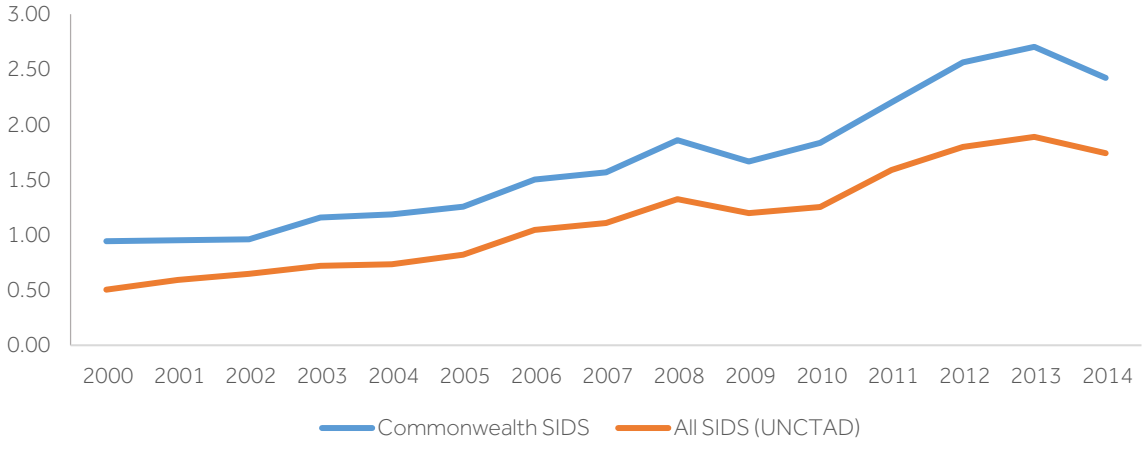
2.1.2 Maritime transport

Over 50 per cent of the world's population, large cities and key industrial hubs are concentrated in coastal areas. Close proximity to coasts enables easy access to international markets (over 90% of global trade is seaborne); continuous inflows and outflows of products and resources; and easy transport links for goods and people (Roberts, 2015).

Maritime transport plays an important role in the economies of small states, given their reliance on imports and openness to international trade. In 2014, global seaborne shipments increased by 3.2 per cent on the previous year to more than 9.84 billion tons and is forecasted to continue growing at a moderate pace in 2015/16 (UNCTADstat, 2016). Although it is difficult to attain disaggregated data on the full contribution of small states to maritime transport, a disproportionately high number of foreign ships have been registered, using open registries[10] in small states. Open registries can increase the government revenues of host countries and reduce red tape and costs for ship owners.

Table 2.1 below shows the top seven Commonwealth small state merchant fleet registrars. Most of these countries are located in the Caribbean region, owing to the high number of vessels passing through the Panama Canal, but, as a group, Commonwealth small states have a relatively high proportion of merchant fleets registered in their countries. In 2011 for example they accounted for more than 7% of the total global fleets (Roberts, 2015; UNCTADstat,

Figure 2.2 Total exports of fish and fish products (US$ billions)



Source: UNCTADstat (2016)

Table 2.1 Top seven Commonwealth small state merchant fleets by flag of registration

	2011	2012	2013	2014	2015
Bahamas	1,407	1,431	1,436	1,422	1,421
Antigua and Barbuda	1,193	1,295	1,280	1,235	1,174
St Vincent and the Grenadines	1,053	1,000	980	990	963
Belize	860	748	758	771	765
Vanuatu	383	430	433	439	442
St Kitts and Nevis	309	257	266	277	299
Tuvalu	212	182	194	207	228
World	83,283	84,709	86,484	87,926	89,464
Commonwealth % of world	7.7%	7.5%	7.3%	7.2%	7.0%

Source: UNCTADstat (2016)

2016). Importantly, however, there are significant untapped economic potential upstream in financial and logistics value chains, which, if successfully developed, could drive economic growth in the future.

2.1.3 Coastal tourism

Tourism is essential to the economic survival of many small states and is a key sector in their national development plans. Global tourist numbers increased by 5 per cent in 2014 to almost 1.2 billion, but arrivals to small states grew at the faster rate of 9 per cent to roughly 19 million. The sector is a key source of hard currency, and receipts as a percentage of total exports increased from 29 per cent in 2012 to 34 per cent in 2014. Caribbean small states have recovered from the decline in receipts caused by the 2008 financial crisis, and the sector now accounts for 41 per cent of total export revenues in the region (World Bank, 2016). Cruise tourism is particularly important in the region and a fast-growing sector, with Caribbean cruises accounting for 50 per cent of global market share by vessel calls and passenger count. In recent decades, however, onboard entertainment on cruise ships has improved, reducing the extent to which passengers disembark at Caribbean ports. As a result cruise tourism in the region is now classified as a high-volume, low-value sector (Pinnock and Ajagunna, 2012). In 2013, for example, receipts from the average tourist visiting the Caribbean were US$1,284, compared with US$1,522 for the Pacific Islands (World Bank, 2016).

The tourism sector in small states has also recovered from a decline in foreign direct investment, with green field investments reaching US$475 million in 2012. This was an increase of 44 per cent on 2011, indicating the growth potential of this key sector of the blue economy for small states (UNCTAD, 2014a). However, there is a growing list of challenges to coastal tourism and marine sustainability, most notably climate change, extreme weather events and pollution. Rising sea level is the biggest threat to coastal areas in the long term, but uncontrolled mass tourism, which damages coastal ecosystems, is the most pressing. One positive development for small states is the growing role of ethical tourism, which sets ecological and infrastructure standards to ensure and advance environmental sustainability.

2.2 Emerging blue economy sectors

2.2.1 Aquaculture

As discussed above, small states have the potential to increase capture fish production, given that the global demand for fisheries is expected to grow at a faster pace than global capture fisheries production. The glut in demand can be met through aquaculture, a sector in which production is projected to expand by a third, reaching almost 80 Mt, by 2021; most of this aquaculture will probably occur in the ocean (OECD, 2012).

However, there are many constraints affecting the prospects of the sector. These include limited opportunities for sites for new operations

Box 2.1 Seychelles and Aquaculture farming – challenges but huge potential

Commercial aquaculture farming in Seychelles has a relatively short history dating back to 1988, when prawn farming was introduced in the outer island of Coetivy by the Seychelles Marketing Board. The farm spanned 96 hectares, employed around 350 people and during its peak in 2004 produced 1,175 tonnes of prawns, which were mainly exported to Japan. However, in 2008 the farm closed down due to high operational costs and poor management.

The country has also experimented with pearl oyster farming since the early 1990s, which became commercially viable five years later. As of 2013, the farm had a stock of over 14,000 oysters at various stages of growth but for long-term financial stability, this needs to increase to 20,000.

Seychelles brief experience with commercial aquaculture farming demonstrates that, with more careful planning, the sector can be viable in a comprehensive blue economy strategy.

(Hecht, 2013).

in increasingly crowded, multiple-user coastal areas, as well as a number of environmental challenges such as the ability of the environment to accommodate increasing discharges of nutrients and pollution, the introduction of alien invasive species and damage to key habitats during the development of aquaculture sites.

2.2.2 Ocean-based renewable energy

Ocean-based energy refers to all sources of energy that are obtained either by harnessing certain characteristics of ocean power (wave, tidal, thermal conversion, salinity gradient) or by utilising ocean space (offshore wind energy) (OECD, 2012). With the growing concern over climate change and increasing global interest in renewable energy, as well as recent technological advances, ocean-based energy sources have received increased interest in recent decades. The global market for ocean energy is not expected to scale up significantly in the medium term, but the long-term potential of the sector is substantial (OECD, 2016).

For small states that are heavily reliant on fuel imports for energy generation and vulnerable to fluctuations in international oil prices, moving to renewable sources of energy is a priority. Many of these countries have the potential to produce significant amounts of ocean-based energy but are limited by physical or investment constraints. In the Caribbean, for example, offshore wind farms have been discussed as a potential energy source, given the region's high population density, but steep drop-offs within relatively short distances of the coast have inhibited their development (Atherley-Ikechi and Rogers, 2016). Floating wind turbines are currently being piloted in Europe and North America but are expected to be available in the Caribbean only after 2025.[11] In the Pacific, a study conducted in six Pacific Island countries found that wave power generation has the most potential among ocean-based energy resources but the capacity and financial resources to adopt and sustain energy conversion technologies is presently weak (SOPAC, 2009).

Other ocean-based renewable energy resources are still in their nascent stages, but there are ongoing pilot projects to test their viability in small states (SOPAC, 2009). However, the costs and scalability of the technologies pose difficult questions and limit their potential to produce renewable energy in the short term. Nonetheless, the long-term potential for ocean power is significant and widespread, although the technologies are at various stages of development.

2.2.3 Marine biotechnology

Marine bioresources provide important ecosystem services for the planet and its inhabitants that must be maintained for human survival. Marine biotechnology refers to the use of marine living organisms for industrial and other purposes, such as the synthesis of novel chemical compounds or the exploitation of pharmacological properties.

Biotechnology has the potential to address a number of global challenges – most importantly for small states, through sustainable food supplies, energy security, environmental remediation and health benefits – and to make a significant contribution to blue growth in many industrial sectors. With regard to energy, for example, algal biofuels offer promising prospects and have attracted billions of dollars of investment since 2010. On the health front, there has been increasing interest in marine microbes, particularly bacteria, with studies demonstrating that they are a rich source of potential drugs. Marine biotechnology has also demonstrated significant commercial potential to contribute to industrial products and processes, and in the life sciences industry as a novel source of enzymes and polymers (OECD, 2012).

Marine genetic resources found within the EEZ of a country are subject to the laws and rules of the national jurisdiction, including access and benefit sharing (ABS) laws. However, most small states do not have specific laws dealing with ABS in relation to genetic resources, making it difficult for them to regulate bioprospecting activities and ensure that they benefit from any discoveries. This is particularly important for small states given that they will probably rely on international technological and scientific knowhow – and, to some extent, foreign firms – to exploit these resources (UNCTAD, 2014a). Tightening their legal and regulatory frameworks, and introducing ABS laws, will be important if they are to receive their share of economic benefits and ensure long-term environmental and resource sustainability.

2.2.4 Blue carbon opportunities and climate change mitigation and resilience

In recent decades, our knowledge of coastal ecosystems and green infrastructure at the coast, and of their potential to tackle the effects of climate change, has improved. For example, we now have a better understanding of the potential of coastal ecosystems, such as mangroves and seagrass meadows, to trap and store vast quantities of atmospheric carbon. This has created new interest in understanding the role of more elements of ecosystems in facilitating the potential for and success of climate change adaptation and mitigation schemes (Commonwealth Secretariat, 2013).

These ecosystems already provide many other services to humanity, such as protection from coastal erosion and buffering storm surges and tsunamis. The addition of carbon sinks as a new service opens up fresh opportunities for valuing these ecosystems. Recognising the economic and environmental values of natural capital at the coast is now seen as one of the essential elements for coastal and island states in building a successful green economy. Acting to conserve these habitats now is critically important and requires a shift to the blue economy built on ocean resources by developing new carbon markets, creating new investment streams and new jobs, and delivering on biodiversity targets. Including the true carbon value of coastal ecosystems in climate change mitigation strategies is also in line with emerging global norms for tackling climate change.

2.3 Threats to the blue economy

The blue economy is strongly dependent on maintaining a good standard of environmental quality to sustain the supply of goods and services it provides for existing and future generations. This is particularly true in the case of small states. Over the past century, however, human use of the world's oceans in traditional areas such as fishing and maritime transportation has intensified, and new uses such as the extraction of offshore oil and gas deposits and seabed minerals have emerged. Unsustainable uses and practices have therefore resulted in significant existential ecological risks that can negatively affect the social and economic prospects of all countries, particularly small states that are acutely dependent on oceans (UN, 2015b). The range of threats to oceans are broad, but the most significant include:

- unsustainable fishing practices;
- pollution from land-based and marine activities;
- marine invasive species; and
- habitat destruction from coastal development and extractive industries.

Notwithstanding the significance of these threats, the greatest systemic threat facing the ocean is climate change. Among the many challenges arising from climate change, four appear to be particularly relevant constraints to building the blue economy in small states:

- rising sea levels;
- reduced supplies of potable water;
- changes in ocean and coastal environments; and
- physical damage from hazardous and severe weather events.

In pursuing the development of the blue economy, it is important to recognise the interconnected nature of ocean and coastal environments. Exploiting one type of marine resource has the capacity to affect, both positive and negatively, other marine resources and the wider marine environment. These factors present both governments and ocean users with significant challenges in ensuring that development goals, strategies and projects do not operate at odds with the vast range of human activities affecting the ocean.

3. Creating the Enabling Conditions to Support Blue Growth

The Commonwealth has a long history of supporting small states on ocean management and sustainability, and is at the forefront of promoting the blue economy as a holistic concept that can address sustainable development policies and programmes at multiple levels. Growing the blue economy requires a range of framework conditions to be fulfilled. Most importantly, there are six key interlinked enablers that are vital for catalysing blue investment and growth: ensuring a healthy marine environment; improving ocean governance; marine surveillance, monitoring and enforcement; infrastructure; ocean business development; and improving marine education and capacity (Roberts, 2015).

However, it should be recognised that countries – particularly small states, given their inherent structural challenges – will face difficulty in implementing all six enabling factors and will have to make trade-offs in sequencing, starting with low-hanging fruits. There are strong synergies and inter-relationships between the enabling factors; below, we discuss them in more detail.

3.1 A healthy, resilient and productive marine environment

A key principle of the blue economy is the inextricable link between ocean health and sustainable economic livelihoods for coastal communities and the wider economy (see Section 1); oceans also provide a range of essential goods and services that would be extremely costly to restore or replace once lost.

For small states in particular, the health of coral reefs and the biodiversity that they provide are of critical importance, both from an environmental and from an economic perspective, because of the heavy reliance of these states on tourism and fisheries. Therefore, effective management of the marine environment and the maintenance and restoration of ecosystem health and integrity is fundamental to ecologically sustainable development.

3.2 Ocean governance

The existing ocean governance frameworks in most, if not all, small states emphasise a traditional sector-specific approach to management and planning, and thus show symptoms of the problem facing a large number of countries seeking to implement a blue economy approach: ocean governance remains highly 'balkanised'. As governments encourage the economic development of marine areas in the future, value-based conflicts between competing interests is likely to increase. It will be difficult to resolve such conflicts without more comprehensive and integrated approaches to marine planning and decision-making, approaches that recognise the interactions between and the interdependent natures of the various ecosystems, both terrestrial and marine, on islands.

Good governance and coordination across government is key to achieving adequate management of the ocean and is, therefore, an overarching theme that is an essential part of the blue economy.

A new approach to governance is needed that recognises the full portfolio of possible uses and activities within the blue economy and, therefore, coordinates management across this portfolio. The main focus of using an integrated system should be to establish, strengthen and implement effective governance mechanisms that contribute to the implementation of the blue economy. Most – if not all – small states need to transition to a more integrated governance approach that considers all users and uses of oceans to sustainably and efficiently utilise ocean resources.

Box 3.1 Pacific Island states – the Nauru Agreement

In 1982, the Pacific Island coastal states signed the Pacific Nauru Agreement (PNA), with the aim of improving cooperation in the management of their fisheries markets. The EEZs of these coastal states accounted for one-third of global canning supplies of tuna, valued at US$3 billion annually, but the Pacific Island countries faced challenges in translating this resource into economic benefits. Foreign licensing arrangements, for example, yielded only US$60 million dollars annually. These countries had a common interest in coordinating their approach to issuing foreign licences and managing their common tuna stock. They introduced the Vessel Day Scheme (VDS), creating a limited number of fishing days in the entire PNA region, with fishing fleets competing for these days. This has resulted in a significant increase in income for PNA members, from US$60 million annually in 2010 to US$249 million in 2013. This, however, did not come at the expense of the industry, as the value of the catch has increased from US$1.9 billion to US$3.9 billion.

PNA members have also successfully introduced measures curtailing stock depletion, including banning fishing in a 3.2 km2 area in international waters named the Eastern High Seas. To ensure compliance, they developed an online fisheries information management system, and in 2011 established an agency to coordinate their onboard observers. Funding of PNA activities has been sourced mainly from cost recovery measures and levies, which has ensured the independence of the organisation from powerful fishing donors, such as the EU and the USA. As a result, the PNA has been successful in asserting the interests of its members in negotiations with donors, and – in a changing geopolitical context, with a rising China – has successfully encouraged competition between the large scale fishing nations in the regions for their own benefit.

Source: Tarte (2014).

3.3 Maritime surveillance, monitoring and enforcement

Creating the conditions needed for the effective management of ocean space and future economic growth depends on a robust maritime regulatory regime combined with an effective and efficient surveillance and enforcement system. Although legal frameworks for many marine activities exist in most countries, weak enforcement is an ongoing challenge in most small states. In addition, there are often regulatory gaps with regard to the range of activities undertaken, as well as duplications in the legislation. The Commonwealth's experience of undertaking stakeholder engagement in small states highlights the difficulties associated with the enforcement of existing rules and regulations, particularly with regard to fisheries. Improving procedures for monitoring and enforcement, and clearly defining the institutional and organisational responsibilities for the management of marine activities and resources of various ministries and departments, are crucial issues that must be addressed. Of critical importance to future economic development is the fact that such frameworks often do not anticipate or provide an enabling environment for future uses of ocean resources. As technological progress enables further exploitation of the marine environment, addressing legal loopholes will become paramount. A key element of monitoring and enforcement is surveillance of a nation's ocean space. To this end, there is a need for small states to enhance their capability to identify threats to their maritime space in a timely manner by sharing and integrating intelligence, surveillance and navigation systems into a common operating picture to position decision-makers to prepare for, prevent, respond to and recover from a broad spectrum of potential maritime-related threats. However, given the multitude of technical and other constraints that small states face, pooling of resources and collaborating through regional associations will be important. The Pacific Nauru Agreement, discussed in Box 3.1, demonstrates the potential economic and environmental benefits for small states of strengthening maritime surveillance and monitoring.

3.4 Infrastructure

Coastal and port infrastructure is critical for catalysing economic growth and development in small states, given their heavy reliance on coastal tourism and dependence on maritime transport to facilitate global trade (UNECA (United Nations Economic Commission for Africa), 2014). However, in many small states, tourism resorts, coastal towns and infrastructure are at risk, given their proximity to the coast and rising sea levels. Relocation or fortification of infrastructure for coastal protection will become financially burdensome for most small states. There is an urgent need for an integrated approach to planning investments in coastal infrastructure that mitigate against both the effects of climate change and the hazards of flooding and erosion.

3.5 Business development, investment and finance

Small states need to develop and implement strategic ocean development plans and policies to stimulate growth in their ocean space in order to increase investments in and development of the blue economy (EIU, 2015). Such strategic development plans should focus on both existing sectors and new and emerging opportunities such as those discussed in Section 2.2 above.

The realisation of the potential rewards and benefits will require strategies that:

- increase investment in developing existing sectors;
- promote investment and innovation to support the development of new and emerging sectors; and
- further develop backward and forward linkages into the value chains of existing sectors.

However, this will be difficult with regard to both public and private economic activities owing to high upfront costs and significant delays in recouping returns. Therefore, it is also necessary to have in place, inter alia, sustainable financing mechanisms that will provide long-term and reliable funding to support blue economy activities, including conservation and sustainable management initiatives for marine and coastal resources as well as the wider environment. A range of innovative finance mechanisms exist that could be applied to a variety of initiatives, including fishery improvement projects, habitat restoration and protection projects, valorisation of a range of marine ecosystem service values, and projects that link coastal and marine ecosystems to climate change adaptation.

In small states in particular, the greatest potential for value addition and job creation lies with the development of small and medium-sized enterprises (SMEs) within blue economy value chains. Finance for SMEs will therefore be an important enabling factor, as these entities can catalyse job creation and economic growth. There is, therefore, a need to examine mechanisms to encourage start-up SMEs and to assist with capacity and technology development.

3.6 Education and capacity building

A lack of education and training in marine management has led to chronic technical gaps in marine planning and decision-making in many small states. Identifying future skills needs and labour market supply and demand trends, and adapting and developing existing education, vocational and professional training programmes to improve capacity in these areas, will be essential if the blue economy is to become a reality.

Knowledge of the marine environment is also critical for effective decision-making – the more small states know about the marine environment, the better they can manage human interaction with oceans. Integrating diverse and complex information, and supplementing it with new research, will contribute to the advancement and management of ocean resources.

Identifying and defining ongoing strategic marine research and information needs, in an inclusive and adaptive manner, together with the appropriate funding resources and mechanisms, is essential for achieving economic development through a blue economy framework. In the context of small states, the pooling of resources – both financial and human – and coordinating existing marine research and educational facilities will be important to sustainably utilise the economic, environmental and social opportunities presented by the blue economy.

4. Conclusion

The blue economy is an evolving concept centred on utilising oceans for their full economic potential. Many countries, both large and small, have embraced the concept, but it has received particular attention from small states with extensive EEZs. By sustainably developing and exploiting their vast ocean resources, small states can turn structural challenges, such as remoteness and being surrounded by oceans, into positive economic opportunities, increasing economic diversification. Currently, for most small states the traditional blue economy sectors of fisheries, aquaculture and tourism play an important economic role and are key sectors for employment and hard currency, but there are major emerging sectors with the potential to spur economic growth in the future. These include ocean-based renewable sources of energy, biotechnology and blue carbon opportunities.

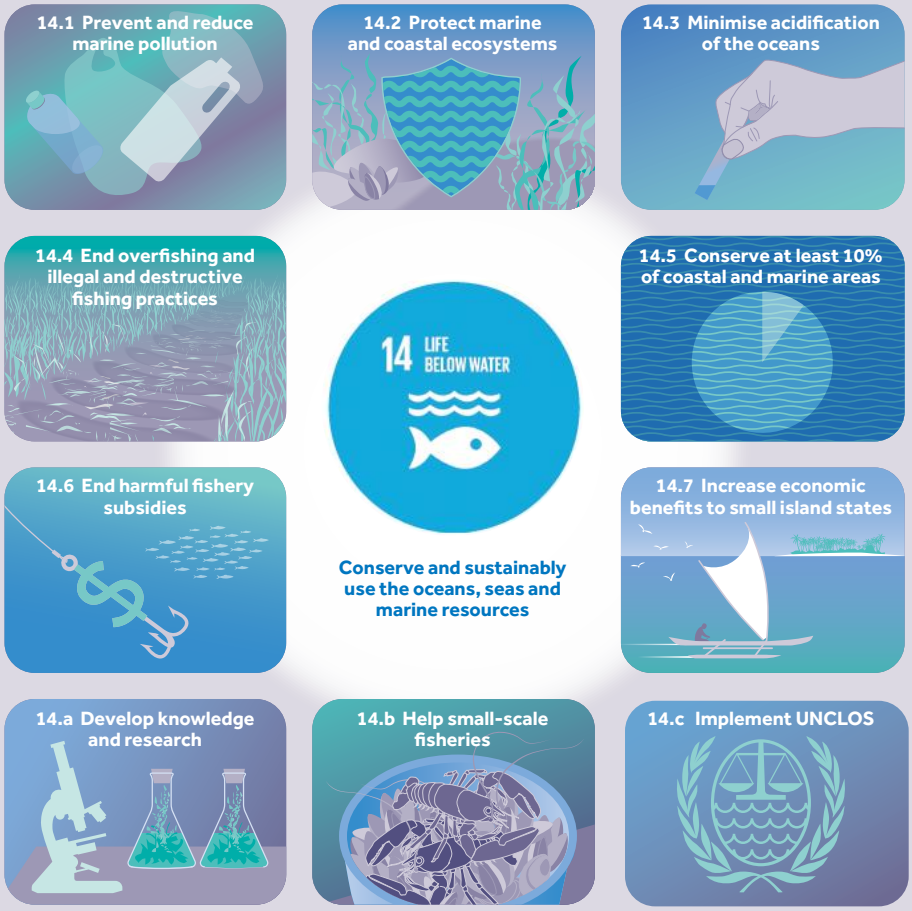
However, fully realising the potential of the blue economy requires six key interlinked and mutually reinforcing enabling factors to be in place. These are safeguarding the health of the marine environment; strengthening ocean governance; maritime surveillance and enforcement; improving and upgrading coastal infrastructure; developing blue SMEs; and improving expertise in marine environment management through education and capacity building. In the context of small states with limited resources, pooling of funds and expertise through regional associations will be important. International development finance can play an important role and assist small states to put in place the enabling factors for an effective blue economy, and support the development of emerging blue economy sectors by bridging the gap between high upfront costs and delayed financial returns.

An upcoming Commonwealth Secretariat publication series on the blue economy will explore these concepts further, including a more detailed analysis of the critical steps necessary to operationalise a blue economy development approach at the national level.[12]

Annex 1: Total EEZ area and land area in Commonwealth small states

Country	Total EEZ area (sq mi)	Land area (sq mi)	Ratio of EEZ area to land area
Antigua and Barbuda	41,675.48	273.40	152.43
Barbados	70,955.15	267.19	265.56
Belize	13,969.95	14,173.48	0.99
Bahamas, The	242,482.19	6,219.93	38.98
Brunei Darussalam	9,783.83	3,274.63	2.99
Cyprus	31,047.25	5,741.47	5.41
Dominica	11,039.82	466.03	23.69
Fiji	494,868.30	11,352.45	43.59
Grenada	10,090.01	211.27	47.76
Guyana	54,196.77	122,316.92	0.44
Jamaica	101,654.52	6,729.45	15.11
Kiribati	1,327,084.09	503.31	2,636.71
Maldives	353,673.82	186.41	1,897.28
Malta	21,444.89	198.84	107.85
Mauritius	491,417.31	1,261.38	389.59
Namibia	216,256.21	511,568.69	0.42
Nauru	119,114.83	*	*
Papua New Guinea	925,322.78	281,394.16	3.29
Samoa	50,785.95	1,758.48	28.88
Seychelles	514,274.18	282.72	1,819.00
Solomon Islands	616,398.20	17,392.18	35.44
St Kitts and Nevis	3,941.72	161.56	24.40
Saint Lucia	5,973.77	379.04	15.76
St Vincent and the Grenadines	14,017.05	242.33	57.84
Tonga	256,661.80	447.39	573.69
Trinidad and Tobago	30,810.18	3,187.63	9.67
Tuvalu	290,222.18	18.64	15,568.91
Vanuatu	319,548.19	7,574.51	42.18728096

Annex 2: Sustainable Development Goal 14 targets



Note: UNCLOS refers to the United Nations Convention on the Law of the Sea

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Endnotes

1. This culminated in Sustainable Development Goal 14, to 'Conserve and sustainably use the oceans, seas and marine resources' (see Annex 2).
2. 'Capture fishery' refers to all kinds of harvesting of naturally occurring living resources in both marine and freshwater environments.
3. Julian Roberts is Adviser, Ocean Governance, the Commonwealth Secretariat; Ahmed Ali is Research officer, Climate Finance and Small States Section, the Commonwealth Secretariat.
4. The idea of the blue economy has become synonymous with the 'greening' of the ocean economy and with the context in which governments, non-governmental organisation (NGOs) and others discuss a more sustainable ocean economy; however, the concepts remain ill-defined and open to wide, and often differing, interpretations (Silver et al., 2016).
5. The categorisation of these sectors into established and emerging is very fluid, but one main criterion is their global proliferation.
6. Currently, 80 per cent of global tourism is linked to the coasts and seas.
7. At the end of 2013, roughly 50 per cent of small states in the Commonwealth had a debt-to-GDP ratio exceeding 60 per cent (Robinson, 2015).
8. This excludes the advanced Commonwealth countries of Cyprus and Malta.
9. The fifth top exporting country is Fiji.
10. This is when a merchant ship from a third country is registered with another country where the owner is not a citizen.
11. For a detailed review of the Caribbean energy landscape, see Atherley-Ikechi and Rogers (2016).
12. Little, if any, practical information is available to countries wishing to implement these concepts. Moreover, the information that does exist focuses primarily on land-based economic development, or has a strong focus on conservation rather than on the sustainable use of and investment in an ocean-based economy for national benefit.

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