Enabling Sustainable Trade in the OECS

The Ocean and Digital Economies

Commonwealth Secretariat

The Commonwealth

OECS
Organisation of Eastern Caribbean States

Enabling Sustainable Trade in the OECS

The Ocean and Digital Economies

The Commonwealth

OECS
Organisation of Eastern Caribbean States

Commonwealth Secretariat
Marlborough House
Pall Mall
London SW1Y 5HX
United Kingdom

www.thecommonwealth.org

Published by the Commonwealth Secretariat.

ISBN (print): 9780850920055
ISBN (e-book): 9780850920062

Contents

List of Figures and Tables

Contributors

Neil Balchin is Economic Adviser for Trade Policy Analysis in the Trade, Oceans and Natural Resources Directorate at the Commonwealth Secretariat.

Selisha Gilchrist is an international trade policy and law researcher.

Clémentine Pitard is Associate at WTI Advisors.

Jan Yves Remy is Director of the Shridath Ramphal Centre for International Trade Law, Policy and Services at the University of the West Indies, Cave Hill campus.

Julian Roberts is Founder and Managing Director of Blue Resources Ltd.

Hannes Schloemann is Director, WTI Advisors and Chief Counsel, Climate Capital.

Colette van der Ven is Founder and Director of TULIP Consulting.

Foreword

The COVID-19 pandemic sparked an unprecedented and lasting social and economic crisis for the world, significantly affecting economic growth, trade and investment flows. Member countries of The Organisation of Eastern Caribbean States (OECS) were hit hard because of their dependence on international trade and tourism and other vulnerabilities as small island developing states (SIDS). However, most of the unique trade challenges facing SIDS predate COVID-19 and involve excessively high trade costs as a result of their small size and remote geography, diseconomies of scale, infrastructure challenges, concentrated production and export sectors, and vulnerability to the impacts of climate change.

In exploring trade-related policy options to drive a post-COVID-19 recovery and support long-term economic growth and resilience, this book examines how OECS countries can harness the promising opportunities of the ocean and digital economies. The "blue economy" approach, which centres around sustainable utilisation of ocean and marine resources for economic growth and development – while simultaneously ensuring environmental sustainability of ocean and coastal areas – is already a priority for OECS countries, with the potential to set their economies on a more sustainable footing.

With maritime areas which are significantly larger than their respective land masses, OECS member countries have the opportunity to diversify and bolster economic growth by expanding traditional sectors such as fisheries, maritime transport and tourism, while also diversifying into emerging higher-value sectors such as sustainable aquaculture, marine biotechnology and marine renewable energy.

Expanding the digital economy and engaging in digital trade can help to reduce transaction and trade costs for the OECS countries, making it easier to participate in global value chains and improve market access and reach, thereby extending the region's export capacity.

This will require greater investment in digital infrastructure and targeted strategies to enable digital trade to flourish. A study by the Commonwealth Secretariat found that the absence of a coherent regional regulatory framework across the OECS, limited availability of financial instruments and high business transaction costs significantly impede the growth of digital trade in the OECS countries. However, these obstacles can be mitigated by leveraging relevant regional and international frameworks to link the opportunities and challenges associated with the digital economy in the OECS with existing regional trading arrangements, and the multilateral trading system.

The Commonwealth Secretariat is working hard to assist all member countries combat climate change and adapt to its adverse effects, especially the growing frequency and severity of natural disasters, but this remains a challenge for OECS members. Some of these disasters — such as hurricanes and floods — will continue to intensify as global warming leads to a further increase in sea-water temperatures. With limited capacity to respond and build resilience to natural hazards, and to mitigate and adapt to climate change, OECS countries require greater support at the international level, especially from their development partners. As well as exploring how they can utilise existing World Trade Organization (WTO) trade rules to support their disaster response, recovery and resilience efforts, it is vital that the experiences of OECS countries shape the need for a more focused agenda on climate change and natural disasters within the multilateral trading system.

The Commonwealth Secretariat and the OECS Commission have worked together over many years to support the six Commonwealth OECS member countries – Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines – to improve their trade and development prospects and address their underlying vulnerabilities. The Commonwealth Small States Office (CSSO) in Geneva houses the Permanent Delegation of the OECS and the countries benefit from the technical and advisory services of the Trade and Human Rights Advisers at the CSSO. We are proud of this partnership and, as OECS countries look towards post-COVID recovery, this publication is both timely and topical, providing a ready reference guide to some of the dynamics, opportunities, challenges and policy options associated with the ocean and digital economies. Our hope is that this book will be of practical assistance to policymakers, parliamentarians, the private sector, academia and civil society, as well as to the wider public, in the eastern Caribbean region.

The Rt Hon Patricia Scotland KC
Secretary-General of the Commonwealth

Dr Didacus Jules
Director General, OECS

Acknowledgements

This project was originally initiated at the request of the Permanent Delegation of the Organisation of Eastern Caribbean States (OECS) to the United Nations Office and other international organisations in Geneva. We appreciate their continued support throughout the development of this book. In particular, the Commonwealth Secretariat is grateful to Stephen Fevrier, formerly Ambassador of the OECS Delegation in Geneva, for his strategic vision and guidance in shaping this project and reviewing the draft papers.

Joel Richards, Senior Technical Specialist - Trade at the Permanent Delegation of the OECS in Geneva, as well as experts at the OECS Commission, the Commonwealth Secretariat and Commonwealth Small States Office in Geneva, provided valuable inputs and comments in finalising the chapters. Colette van der Ven prepared the Introductory and Concluding chapters of this book, with input from members of the Commonwealth Secretariat's International Trade Policy Section.

The production of this report was managed by Clive Lawson.

Abbreviations and acronyms

AI	artificial intelligence
AIS	Automatic Identification System
AoA	Agreement on Agriculture
AZGI	A-Z Gap Index
CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CARIFORUM	Caribbean Forum
CBC	Commonwealth Blue Charter
CBF	Caribbean Biodiversity Fund
CBP	Caribbean Billfish Project.
CC4FISH	Climate Change Adaptation in the Eastern Caribbean Fisheries Sector
CCI	Caribbean Challenge Initiative
CCPF	Compete Caribbean Partnership Facility
CDB	Caribbean Development Bank
CEFAS	Centre for Environment, Fisheries and Aquaculture Sciences
CITES	Secretariat for the Convention on International Trade in Endangered Species
CLME+	Caribbean Large Marine Ecosystem
COP	Conference of the Parties
CRFM	Caribbean Regional Fisheries Mechanism
CROP	Caribbean Regional Oceanscape Project
C-SERMS	Caribbean Sustainable Energy Roadmap and Strategy
CTE	Committee on Trade and the Environment
DDS	digitally deliverable services
DRI	Digital Readiness Index
ECCB	Eastern Caribbean Central Bank

ECCU	Eastern Caribbean Currency Union
ECROP	Eastern Caribbean Regional Ocean Policy
EEZ	*exclusive economic zone*
EGRIP	E-Government for Regional Integration Programme
EIU	Economist Intelligence Unit
EPA	Economic Partnership Agreement
EPS	electronic payment suppliers
EU	European Union
FAO	Food and Agriculture Organization of the UN
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
G–BE SAP	Green–Blue Economy Strategy and Action Plan
GDP	gross domestic product
GDPR	General Data Protection Regulation
GEF	Global Environment Facility
GFDRR	Global Facility for Disaster Risk Reduction
GIS	global information system
GPS	global positioning system
HIPCAR	Harmonization of ICT Policies, Legislation and Regulatory procedures in the Caribbean
IADB	Inter-American Development Bank
ICT	information and communication technology
IFRC	International Federation of Red Cross and Red Crescent Societies
ITU	International Telecommunication Union
IUU	illegal, unreported and unregulated (fishing)
IWEco	Integrating Water, Land and Ecosystem Management in Caribbean Small Island Developing States
JSI	Joint Statement Initiative
MC	Ministerial Conference
MFN	most favoured nation
MPA	marine protected area

MRE	marine renewable energy
MSMEs	micro, small and medium enterprises
NOAA	National Oceanic and Atmospheric Administration
NOC	National Oceanographic Centre
OCHA	United Nations Office for the Coordination of Humanitarian Assistance
ODS	OECS Development Strategy
OECD	Organisation for Economic Co-operation and Development
OECS	Organisation of Eastern Caribbean States
OFOC	overfishing and overcapacity
OHI	Ocean Health Index
OTEC	ocean thermal energy conversion
PAGE	Partnership on Action on Green Economy
PSH	public stockholdings
QR	quick response
R&D	research and development
RTA	Regional Trade Agreement
S&DT	special and differential treatment
SBE	Sustainable Blue Economy (UNEP FI)
SDG	Sustainable Development Goal
SEEC	Sustainable Energy for the Eastern Caribbean
SEF	Sustainable Energy Facility
SGD	St George's Declaration of Principles for Environmental Sustainability in the OECS
SIDS	small island developing states
SMEs	small and medium enterprises
SVEs	small and vulnerable economies
TEU	20-foot equivalent unit
TFA	Trade Facilitation Agreement
TNC	The Nature Conservancy
UBEEC	Unleashing a Blue Economy of the Eastern Caribbean
UN	United Nations

UNCITRAL	United Nations Commission on International Trade Law
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP FI	UNEP Finance Initiative
UNGA	United Nations General Assembly
UNHCR	United Nations Refugee Agency
UNIDO	United Nations Industrial Development Organization
USA	United States of America
WTO	World Trade Organization
WTTC	World Travel & Tourism Council

Introduction

This book explores the devastating consequences of the COVID-19 pandemic on the six Organisation of Eastern Caribbean States (OECS) countries of the Commonwealth between early 2020 and the end of 2021. As Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines look beyond the pandemic, recent global developments, including slowing economic growth in major economies amid rising inflation and interest rates,[1] geopolitical tensions and continued supply chain disruptions could present new challenges for their economic and trade recovery. Against this backdrop, the book highlights the need for these countries to build sustainable economies that are more resilient to external shocks by addressing their unique vulnerabilities and developing sustainable 'blue economies'. In addition, OECS countries should respond to challenges related to developing digital economies, including by putting in place a digital enabling environment, not only as a response to the pandemic but also to address some of their vulnerabilities.

In this regard, the book contains three different analyses on the sustainable ocean economy, the digital economy and the impact of climate change and natural disasters. These analyses provide guidance to the OECS countries as they pursue their economic recovery efforts.

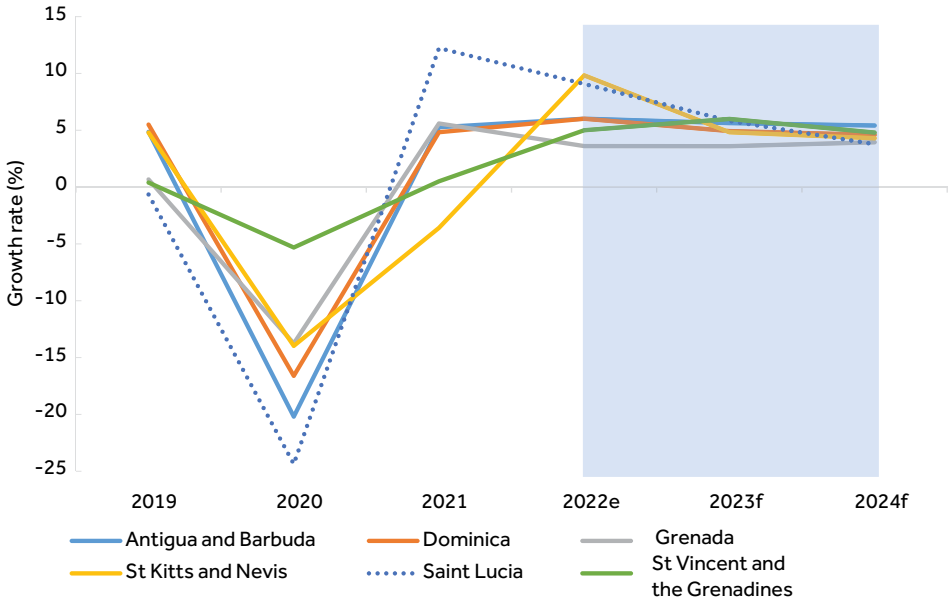
Impact of COVID-19 on OECS Commonwealth countries

Between early 2020 and late 2021, the COVID-19 pandemic had devastating impacts on economies around the world. The OECS Commonwealth countries were hit particularly hard because they face unique vulnerabilities. These vulnerabilities relate to their small size and economies; geographic remoteness; lower economies of scale and higher costs for the provision of state services; lack of economic diversification; and exposure to environmental and external economic and financial shocks, including a large range of impacts of climate change and potentially more frequent and intense natural disasters (UN, 2012: para. 178; Herbert, 2019; UNGA, 2019).

The pandemic adversely affected merchandise trade and disrupted travel and tourism-related services, which induced a deep recession in these economies. Gross domestic product (GDP) growth in all six countries declined drastically in 2020, with contractions ranging from 4 per cent for St Vincent and the Grenadines to around 19 per cent for Saint Lucia. It also resulted in reduced trade flows. The six OECS countries experienced a decline in trade of around 19 per cent, which

1 Global growth is forecast to slow from 3.4 per cent in 2022 to 2.9 per cent in 2023 but rise to 3.1 per cent in 2024. Global inflation is expected to fall to 6.6 per cent in 2023 and to 4.3 per cent in 2024, although it is expected to remain above the levels observed before the pandemic (IMF, 2023).

Figure 1. GDP growth rates of OECS countries, 2019-2024f



Source: Commonwealth Secretariat (calculated using IMF World Economic Outlook dataset for October 2022).

is more than twice the drop in world trade during the same period. COVID-19 also had a devastating impact on the OECS' services industries, for which trade flows fell dramatically in 2020. Exports of services, comprising mostly travel, transportation and other business services, fell by more than half, from EC$10,647 million to EC$5,058 million, between 2019 and 2020. The import of services, which is dominated by other business services, followed by transportation, travel and insurance, decreased from EC$4,944 million to EC$2,757 million over the same period (Commonwealth Secretariat, 2021a).

The pandemic particularly affected micro, small and medium enterprises (MSMEs), which form the backbone of Caribbean economies – directly, through demand-side shocks and supply-side effects, as well as indirectly, through the financial shocks and uncertainty that were likely to play out longer term (Saha and Thorpe, 2020). A cross-cutting survey conducted by the OECS Competitive Business Unit to gauge the impact of COVID-19 on MSMEs in the region highlighted the following challenges: interruptions to input supplies as a result of lockdowns; a reduction in transportation logistics; supply chain disruptions; increases in the cost of raw materials; a reduction in sales revenues owing to lockdowns and decreases in production; and declines in export sales as a consequence of reduced demand for non-health-related products and the general disruption in transportation logistics (OECS Commission, 2020a). MSMEs are particularly vulnerable to economic shocks as they tend to have fewer assets and more limited cash reserves than larger enterprises, as well as lower levels of productivity. Moreover, they were overrepresented in the non-essential services sectors that the pandemic-related restrictions hit the hardest.

The COVID-19 pandemic reduced GDP growth in five of the OECS countries by more than 10 per cent in 2020. However, growth rebounded sharply in 2021 and 2022. Despite the anticipated global slowdown in the coming years, the OECS countries are forecast to experience strong growth (above 4 per cent) in 2023 and 2024 (Figure 1).

The road to recovery post-COVID

The post-COVID road to recovery presents an opportunity to build back better – that is, to build sustainable economies that are more resilient to external shocks. Doing so will require addressing the OECS countries' unique vulnerabilities, including by focusing on opportunities to diversify and strengthen their economies. It will also require being strategic and proactive about addressing the unique opportunities and challenges of the 21st century. On the one hand, this entails responding to issues related to environmental sustainability with a focus on sustainable oceans management, also known as 'the blue economy'. Indeed, failure to do so will have a directly negative impact on the OECS countries' economies, which, with an average land mass to marine space ratio of 1:85, are heavily dependent on marine resources. On the other hand, the OECS countries' post-COVID recovery strategies should address challenges and opportunities related to developments in the digital economy, including by putting in place a digital enabling environment, not only as a response to the pandemic but also to work towards a more robust long-term situation in light of their vulnerabilities.

In this context, this book contains three different analyses that seek to provide guidance to the OECS countries as they embark on their recovery journeys. Chapter 1 focuses on the marine waters and resources of the OECS region, highlighting the importance of the blue economy – an evolving development approach centred around the sustainable use of the ocean for its socio-economic potential, which could mitigate some of the inherent structural challenges of the OECS countries. It explores potential ocean-based development opportunities that the OECS and its member countries could pursue as they emerge from the worst impacts of the pandemic. The chapter finds that the strategic investment of post-COVID recovery and stimulus funds into the blue economy offers opportunities to accelerate the sustainable and equitable growth of blue economy sectors, including sustainable aquaculture, marine biotechnology and marine renewable energy. This would secure the long-term health and resilience of the ocean and blue economy for the region.

Chapter 2 explores how the OECS region can leverage opportunities in the digital sphere to advance resilient and sustainable post-COVID recovery. It finds that leveraging the digital economy could accelerate post-COVID reconstruction processes in OECS member countries, thereby rendering the region more resilient to future stocks. The study further explores ways to leverage trade agreements to address challenges to e-commerce readiness in the region – including in areas related to data and consumer protection and cybersecurity, payment infrastructure and solutions, trade facilitation, and investment promotion. Specifically, the chapter provides detailed information on the ongoing e-commerce negotiations at the WTO, including the WTO Work Programme and the Joint Statement Initiative on e-commerce, and

analyses the potential implications for the OECS countries should they opt in or out of joining the negotiations.

Chapter 3 recognises that the OECS region is perpetually vulnerable to the effects of climate change, especially the growing frequency and intensity of natural disasters. However, if properly harnessed, trade can offer positive solutions in terms of mitigating climate change, adapting to its consequences and building resilience to future disasters. The chapter analyses the extent to which OECS Commonwealth countries can utilise existing World Trade Organization (WTO) trade rules to support their disaster response, recovery and resilience efforts and the challenges they may encounter in utilising these flexibilities. It concludes by exploring the scope for inclusion of natural disasters and climate change as distinct areas on the current WTO negotiating agenda, especially remaining fisheries subsidies issues, including special and differential treatment, e-commerce and agriculture.

While each chapter focuses on a different part of the OECS' recovery strategy, they all touch on common themes. For instance, each chapter highlights the importance of investing in innovation and digital technology to sustain a resilient and sustainable recovery. All the chapters also highlight the important role of financing – through Aid for Trade and strategic investment – that will be required to render the OECS countries more resilient in a post-COVID world. In this regard, inter-ministerial collaboration will be critical, as will public–private partnerships. The OECS, as a successful regional political and co-operation mechanism, will need to play a critical role in facilitating a co-ordinated and orchestrated regional approach to post-COVID recovery.

Chapter 1

Developing and Harnessing the Blue Economy in the OECS

Julian Roberts

1.1 Introduction

'The blue economy' is an evolving development approach centred around sustainable utilisation of the ocean for its full socio-economic potential. It seeks to promote economic growth, social inclusion and the preservation or improvement of livelihoods, while at the same time ensuring environmental sustainability of ocean and coastal areas (World Bank and UNDESA, 2017). Perhaps nowhere is the blue economy more relevant than in the Caribbean, where it directly supports the economies of 37 coastal and small island countries and territories.

Member countries of the Organisation of Eastern Caribbean States (OECS) have jurisdiction over maritime areas that are significantly larger than their respective land areas (Table 1.1). They are, therefore, increasingly looking to their maritime waters to both diversify and bolster economic growth by exploring new opportunities for investment and employment and to support local livelihoods. Opportunities exist not only for growth and innovation in traditional sectors, such as fisheries, marine transport and marine-based tourism, but also to expand into higher-value emerging sectors, such as sustainable aquaculture, marine biotechnology and marine renewable energy. However, the full potential of the ocean is not being realised. Barriers to ocean sustainability need to be addressed, and, for OECS countries to fully optimise the benefits of the blue economy, regional, state and non-state actors need to work together to implement a robust enabling environment that will benefit the region as a whole.

The impact of the COVID-19 pandemic on Caribbean economies has been significant, and its duration and severity remain unclear, resulting in considerable uncertainty in terms of the outlook for the region. All blue economy sectors and activities have been affected, with the most vulnerable groups, such as coastal communities and informal workers, suffering the most (Northrop et al., 2020). This notwithstanding, policymakers across the OECS region are focusing on the post-COVID recovery and how to set the economy on a sustainable footing.

The strategic investment of post-COVID recovery and stimulus funds offers opportunities to accelerate the sustainable and equitable growth of blue economy sectors, thereby securing the long-term health and resilience of the ocean and the blue economy. Nevertheless, compared with in other economic sectors, only a limited number of investments are currently directed towards blue economic development.

Table 1.1 Key geographic characteristics of OECS countries

	Land area (km^2)	Coastline (km)	EEZ area (km^2)	Shelf area (km^2)	OHI[a] ranking
Anguilla*	91	16	92,178	N/A	123/121
Antigua and Barbuda	442.6	153	110,071	3,886	27/121
British Virgin Islands*	151.4	80	80,117	3,093	110/221
Dominica	750	148	28,593	356	201/221
Grenada	348.5	121	26,133	2,709	134/221
Guadeloupe*	1,628	306	90,570	2,150	71/221
Martinique*	1,128	350	47,372	1,230	71/221
Montserrat*	102	40	7,582	168	74/121
St Kitts and Nevis	261	161	10,209	855	86/121
Saint Lucia	617	158	15,472	593	139/221
St Vincent and the Grenadines	389	N/A	36,304	2,223	166/221

***** Associate members. EEZ = exclusive economic zone; OHI=Ocean Health Index.

Note: [a] The OHI is the comprehensive framework used to measure ocean health from global to local scales (http://www.oceanhealthindex.org/).

According to a recent analysis prepared by the World Resources Institute (Northrop et al., 2020):

> *Despite its central importance to the global economy and the people's livelihoods, the ocean economy was overlooked in the over $10 trillion in COVID-19 stimulus packages announced by governments to date. This is a missed opportunity, both in terms of supporting ocean workers and communities that have been deeply impacted as well as the potential return on investment from sustainable ocean solutions.*

In exploring trade-related policy options to drive a post-COVID recovery and support long-term economic growth and resilience, OECS countries have sought analysis on possible responses to the opportunities and challenges related to the blue economy, the digital economy and micro, small and medium enterprises (MSMEs). This chapter seeks to explore the potential ocean-based development opportunities that the OECS and its member countries could pursue as they emerge from the worst impacts of the pandemic, provided the right conditions are created to support these opportunities. Building on existing literature and policy initiatives, the purpose of this chapter is to identify gaps and actions related to the development of sustainable blue economies and to make recommendations on the types of resources and actions that will be required at both the regional and the national levels to advance the blue economy across the OECS.

It should be stated at the outset that this chapter has been prepared at a time when the OECS Commission is executing numerous initiatives aimed at defining future development scenarios. These include the sustainable utilisation of natural resources and the future implementation of a comprehensive green-blue economy development framework. To this end, several policies, strategy documents and action plans have already been, or are currently being, prepared. Furthermore, in the context of the

blue economy, several donor-funded initiatives are underway, or planned, that will provide implementation support to strengthen ocean governance arrangements across the OECS, most notably with respect to implementation of the recently revised Eastern Caribbean Regional Ocean Policy (ECROP).

While every attempt has been made to identify the most pressing needs for advancing the blue economy in the OECS, it would neither be helpful nor efficient to simply reinforce the various strategies and actions that have been agreed under those initiatives. It is also beyond the scope of this brief chapter to address all the reforms necessary to enable the transition to a sustainable blue economy. Instead, the chapter focuses in more detail on three key themes that not only will be required to support a blue economy agenda but also are critical from the perspective of the broader regional development framework being implemented by the OECS Commission – namely, deploying sustainable finance instruments; developing existing and emerging business opportunities to grow the blue economy; and applying science and technology to address key ocean sustainability challenges facing the blue economy.

1.2 The OECS and the blue economy

1.2.1 Geographic context

Bordered by the Atlantic Ocean to the east and the Caribbean Sea to the west, island nations of the Eastern Caribbean form a long, partly volcanic, island chain in the Caribbean Sea. They include eight sovereign states and 14 dependencies of the UK, the Netherlands, France and the USA. For the purposes of this chapter, the Eastern Caribbean region refers to these islands and the marine waters surrounding them (Figure 1.1).

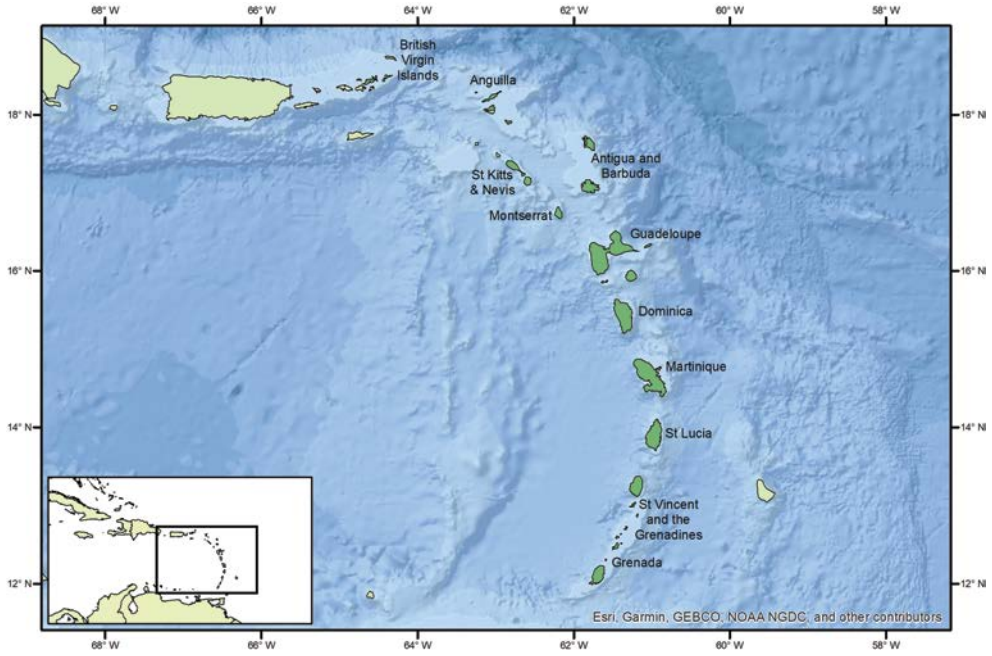
Of these 22 states and territories, 11 are either full or associate members of the OECS (see Table 1.1). This smaller 'OECS region' covers a land area of some 3,500 km^2 and is home to over 1.5 million people. OECS regional waters cover an area well in excess of 500,000 km^2, almost 150 times the land area (Table 1.1). Hence, the marine waters of the OECS region and the marine resources therein offer OECS countries significant opportunities for future economic development.

1.2.2 Marine environment

The maritime waters of the wider Caribbean support a high diversity of associated flora and fauna. This rich biodiversity, owing partly to isolation within the Caribbean Sea, has resulted in high rates of national and regional endemism and contains the greatest concentration of rare and endemic marine species in the Western hemisphere. The Caribbean is among the top global biodiversity hot spots in the world (CANARI, 2019). These coastal resources provide the basis for a range of economic and social activities, including the tourism and fishing industries.

While these ecosystems are essential to the overall economy of the OECS region, they are also overexploited and under-protected. The range of threats facing the region's maritime waters include unsustainable exploitation of fish and other living resources, pollution from marine and land-based sources, invasive species and habitat damage. Climate change has added to these pressures and may also lead to an increase in

Figure 1.1 Geography of the Eastern Caribbean region



Source: Google Maps (2021).

their cumulative impacts. Moreover, the interconnected nature of ocean and coastal environments means that exploitation of one type of marine resource has the capacity to affect other marine resources and the wider marine environment.

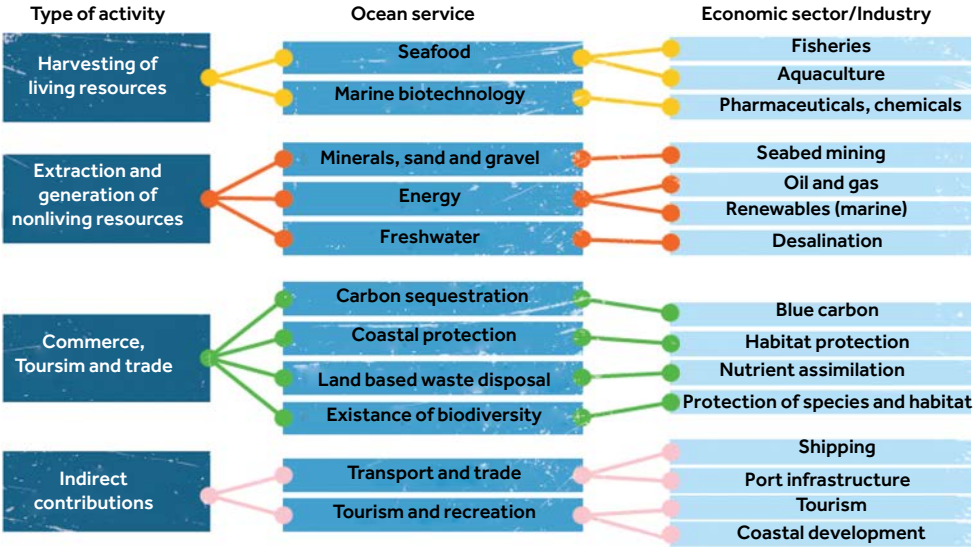
Given that the health of the oceans is linked inextricably to the sustainability of economic livelihoods for coastal communities and the economy generally, a fundamental requirement for the blue economy is that ocean ecosystems and resources are healthy and productive. For the Caribbean in particular, the health of coral reefs and associated biodiversity is of critical importance both from an environmental perspective and as an economic one. Thus, effective management of the marine environment and the maintenance and restoration of ecosystem health and integrity are fundamental to ecologically sustainable development.

1.2.3 Importance of blue economy sectors across the OECS

While projections are scarce, prior to the COVID-19 pandemic indications suggested that blue economies would continue to grow faster than overall economic growth in the coming decades (Patil et al., 2016). The sustainable scenario of the Organisation for Economic Co-operation and Development (OECD) indicated that Caribbean ocean-based economies could employ 8.6 million people in 2030 and could generate a value of US$640 billion (OECD, 2016). This forecast is, however, likely to have altered significantly.

The blue economy is not a uniform theme but rather a concept that embraces multiple sectors with different investment opportunities. The list of sectors relevant

Figure 1.2 Blue economy sectors of the OECS region



Source: OECS Commission (2020b).

from a maritime perspective is broad and different approaches have been adopted to categorise and classify the key sectors and subsectors that fall within the purview of the blue economy. According to the OECS Commission (2020b), while in each OECS nation the mix of oceanic activities varies, depending on the unique national circumstances and the vision for a blue economy, tourism, fisheries and maritime transport are the predominant sectors operating throughout the region. In many OECS countries, the coastal area is also a source of construction materials. Several small-scale examples of aquaculture and biotechnology are also identifiable in specific countries (Figure 1.2).

Tourism

- Tourism is the main pillar of the economy in most OECS countries, accounting for 75 per cent of the collective gross domestic product (GDP), and it is a substantial contributor to employment. It is also a major source of foreign exchange and has since the 1990s helped offset a decline in agricultural exports. This heavy reliance on tourism meant a large part of the region was disproportionately affected by the pandemic during 2020.
- The Caribbean is also the world's premier cruise tourism destination, commanding over 60 per cent of the world cruise market.
- Tourism is heavily reliant on the marine environment to support the various subsectors (such as scuba diving, yachting and sport fishing). Environmental degradation could therefore have a significant impact on the value of this sector, depending on how tourists perceive the quality of the marine environment and the tourism experience.

Fishing

- Fisheries is an important subset of the blue economy for OECS countries, and represents a significant source of nutrition, employment and foreign exchange, as well as contributing to social and economic stability. Further, the region provides global markets with important fisheries-based products (including shrimp, red snapper and emblematic species such as spiny lobster and queen conch).
- In 2018, the value of marine capture fisheries production reported across OECS countries[2] was approximately US$66.4 million (Masters, 2018). The value of aquaculture production was almost $183,000.
- In 2018, almost 11,000 people were reported as working directly in commercial capture fisheries, with a total fleet of almost 5,000 fishing vessels operating in the commercial capture fisheries. A further 138 reportedly work in the aquaculture sector. According to the Food and Agriculture Organization of the UN (FAO), for every one person working directly in capture fisheries or aquaculture a further three people are employed in secondary but dependent activities. This means that well over 40,000 people are employed in activities relating to fisheries across the OECS.
- According to figures published by the Caribbean Regional Fisheries Mechanism (CRFM), the total value of fish and fish products imported to OECS countries in 2018 was approximately US$37 million, while the value of exported fish and fish products for the same year was approximately $8.1 million, with some countries (e.g. Antigua and Barbuda, and Saint Lucia) being most reliant on imported fish (Masters, 2018).

Maritime transport

- Caribbean island nations are almost entirely reliant on shipping to support their economies. Shipping and the supporting infrastructure, such as ports and harbours, are vital to the economic growth of the islands.
- The Caribbean Sea is a major global shipping hub, given the large number of vessels converging on and departing through the Panama Canal. The recent doubling of the capacity of the Panama Canal, effective in 2016, means it can now accommodate 96 per cent of containerships currently in service. Plans also exist for a second inter-oceanic canal in Nicaragua, although limited progress on this has been made to date.

1.2.4 Trade profile of selected blue economy sectors

Only a few regional and international initiatives have attempted to map and measure the ocean economy, and only modest international funds have been devoted to the development of ocean economy and trade strategies (UNCTAD, 2021a). To date, Jamaica is the only Caribbean country that has preliminary estimates for the blue

2 Data are reported for Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines.

Table 1.2 Selected indicators of blue economy activity

	Fisheries		Ports and shipping	Tourism	
	Capture fisheries production (US$)	Aquaculture production (US$)[1]	Container port throughput (TEU)[2]	Visitor expenditure GDP (%)[3]	Total cruise tourism expenditure (US$m)[4]
Anguilla	10,040,000	0	6,229	37.9	NA
Antigua and Barbuda	14,767,071	131,852	27,656.88	40.5	77.74
British Virgin Islands	NA	NA	45,956	26.6	12.63
Dominica	4,638,860	0	8,083	21.6	50.81
Grenada	13,809,151[a]	0	26,290	20.1	19.25
Guadeloupe	NA	NA	NA	NA	52.94
Martinique	NA	NA	NA	NA	38.22
Montserrat	203,053	0	2,238	14.4	DNA
St Kitts and Nevis	5,531,147	0	14,258	20.7	149.28
Saint Lucia	10,278,458	50,789	31,875	70.1	59.42
St Vincent and the Grenadines	7,084,487	0	18,650	13.9	16.43

TEU = 20-foot equivalent unit.

Note: [a] 2017 estimated.

Sources: [1] Masters (2018); [2] 2019 data from https://data.worldbank.org/indicator; [3] 2018 data from Ram et al. (2019); [4] 2017/18 cruise season data from Business Research and Economic Advisors (2018).

economy (Ram et al., 2019). Based on the traditional elements of the blue economy (visitor accommodation, fishing, tourism and recreation services, and maritime transport), Ram et al. (2019) obtained a 'measurable and direct impact of 6.9% of GDP in 2017 and an average contribution of 6.7% for the period 2012 to 2017'. There are no comparable data for OECS countries for use in measuring the overall contribution of the blue economic sectors to the economy.

However, given the specification of the activities undertaken within the blue economy, estimates for some indicators on blue economy activities can be discerned from the available data, to provide a sense of the current size of the blue economy for OECS countries (Table 1.2). More formally, the blue economy should be measured through the adoption of satellite accounts within the overall system of national accounts designed to measure special features of a particular sector or set of activities.

1.3 The blue economy in the context of OECS sustainable development

A recent analysis of the role of trade policy in the Caribbean Community (CARICOM) region's COVID-19 economic recovery concluded that the Caribbean's future development should hinge on five core areas: (i) innovation and industrial policy; (ii) agricultural development and food security; (iii) e-commerce; (iv) MSME development and export activity; and (v) investment facilitation for development (Braithwaite et al., 2020).

While it is tempting to view the blue economy in isolation, it should not be seen as a development strategy in and of itself, but rather as conceived in the context of a broader sustainable development framework, particularly in terms of how it can contribute to the post-COVID-19 economic recovery. With this in mind, it is worth noting that the OECS Commission is in the process of revising its overall development framework, taking into account future environmental, social and economic development needs. To this end, the Commission has prepared a number of new and updated development strategies that, when considered together, provide a context for future development of the blue economy.

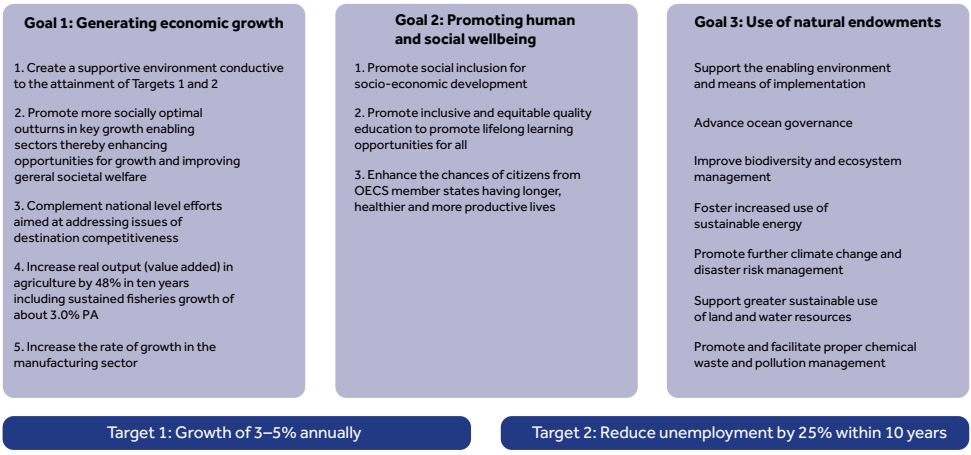
1.3.1 OECS Development Strategy 2019–2028

The OECS Development Strategy (ODS) 2019–2028 represents the systematic approach adopted by the OECS Economic Union to holistically respond to pressing threats to the common ideal of social and economic betterment of the peoples of the OECS (OECS Commission, 2018). The ODS has been developed around three mutually reinforcing goals, each with a comprehensive list of strategic objectives (Figure 1.3).

1.3.2 St Georges Declaration 2040

Originally adopted in 2001, the St George's Declaration of Principles for Environmental Sustainability in the OECS (SGD) was an effort to respond to a rapidly evolving global policy environment in a manner that reflected the contexts and priorities

Figure 1.3 ODS goals and objectives



Source: OECS Commission (2018).

of OECS member countries. Following an internal review of the SGD in 2017, the OECS Council of Ministers for Environmental Sustainability mandated the OECS Commission to revise and update the document, to better align it with national and regional circumstances, priorities and international frameworks.

The resulting SGD 2040 responds to priority environmental problems and opportunities for nature-based solutions in the OECS region: climate change and sea level rise, threats to biodiversity, threats to freshwater resources, land degradation, degradation of coastal environments and marine resources, pollution and waste management, and high energy costs. SGD 2040 affirms that sustainable development in the OECS region can be achieved only through a broad alliance of people, governments, civil society, the private sector and international development partners.

SGD 2040 focuses on six strategic priorities and several enabling actions (cutting across all strategic priorities) that will consolidate and strengthen the delivery of the transformative and strategic actions identified for each of the programmes (Figure 1.4).

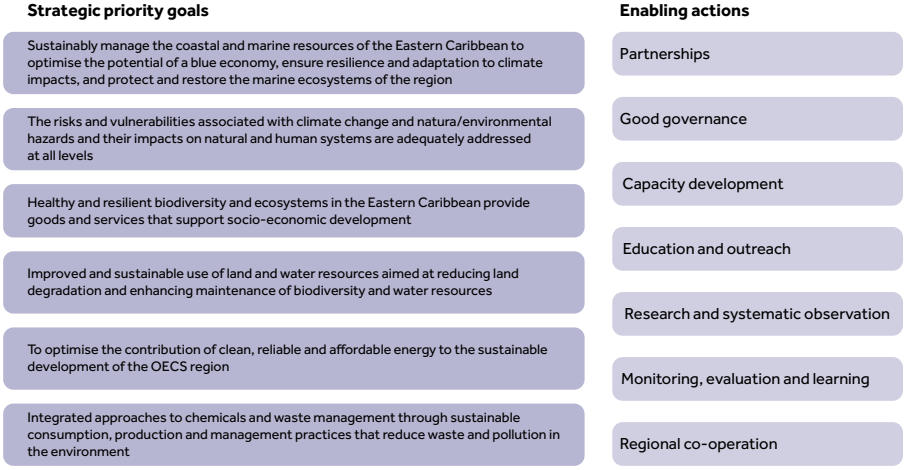
1.3.3 OECS Green–Blue Economy Strategy and Action Plan

The draft OECS Green–Blue Economy Strategy and Action Plan (G-BE SAP) arose as a result of a diagnostic study carried out by the Caribbean Natural Resources Institute (CANARI) (McHale, 2018). The study provided major policy recommendations to support a transition to a more structured sustainable development strategy in the OECS, including, among other things, development of such a strategy and action plan to define key principles, objectives, policy needs, pathways and capacity requirements for economic transformation (Figure 1.5).

1.3.4 Eastern Caribbean Regional Ocean Policy 2020

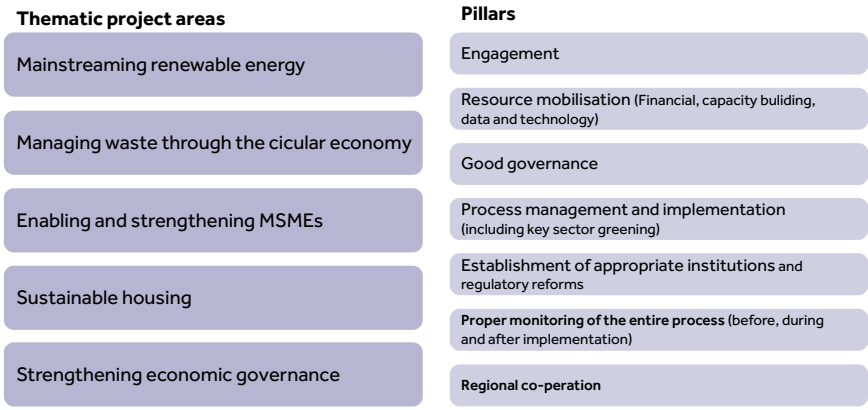
While development of existing and new blue economy sectors could contribute to the development goals articulated in the various instruments presented above, such

Figure 1.4 St Georges Declaration 2040 strategic goals and enabling actions



Source: OECS Commission (2021).

Figure 1.5 Thematic project areas and pillars of the OECS Green–Blue Economy Strategic Action Plan



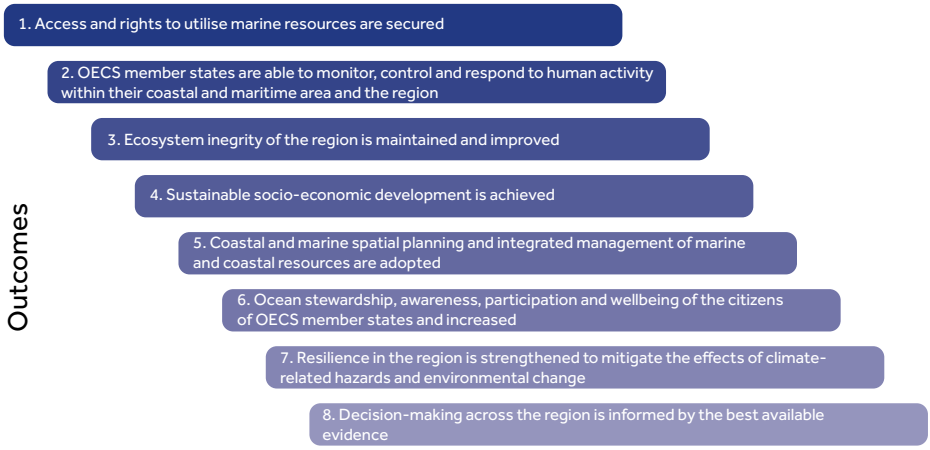
Source: OECS Commission (2020c).

development must recognise the interdependencies of the environmental, social and economic dimensions of sustainable development and seek to integrate them in a more holistic manner to support the transition to a sustainable blue economy.

To this end, the OECS Commission is continuing to develop a comprehensive governance framework to support sustainable development of the region's maritime space. Underpinning this framework is the Eastern Caribbean Regional Ocean Policy (ECROP),[3] formulated to guide the activities of OECS countries to support

3 Originally adopted by OECS Heads in 2013, the ECROP and its Action Plan were updated in 2019 to reflect the principles endorsed in recent regional and global agreements as well as to align them with the UN Sustainable Development Agenda.

Figure 1.6 ECROP strategic outcomes



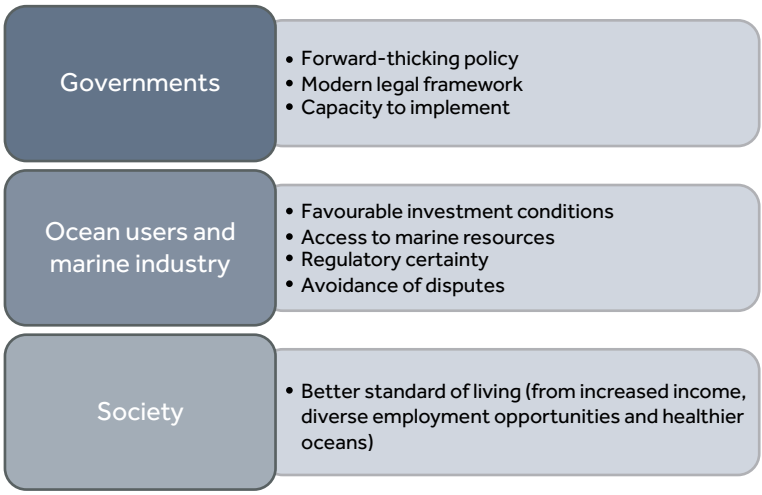
Source: OECS Commission (2019).

regional co-ordination and collaboration, and the harmonisation of national and regional actions, in respect of the management of the maritime waters of the OECS region. This includes inter-sectoral planning and development of ocean activities in a rational and sustainable manner, to generate jobs and income and to contribute to social inclusion. The ECROP consists of a vision, principles, policy outcomes and goals and is complemented by the development and implementation of National Ocean Policies (Figure 1.6). In this regard, while the ECROP is not the framework for a blue economy, it does provide the policy basis for the sustainable development of the OECS' maritime space.

1.4 Enabling conditions necessary to unlock the blue economy

To create ocean solutions that are durable, we must recognise the interdependencies of the environmental, social and economic dimensions of sustainable development and seek to integrate them in a more holistic manner to support the transition to a resilient blue economy. Enabling this transition requires governance and policies that integrate environmental and economic considerations. This must include good laws and regulations, strong institutions and multi-agency co-operation, and inclusive decision-making processes involving all stakeholders (including business) along with evidence-based support (EIU, 2015). Moreover, clear co-ordinated institutional mechanisms for integrated ocean management established and implemented across all maritime sectors will be essential to accommodate and resolve conflicts between the vast range of marine-related interests and values. More importantly, translating new opportunities into productive sectors will require investment in research and development (R&D), building technical capacity and creating the right environment to attract and retain outside investment. These must be fundamental principles of the blue economy. Ultimately, the blue economy must deliver acceptable economic

Figure 1.7 Needs and interests of different stakeholder groups



benefits both to those making investments to harness the oceans' resources and to local people and communities (Figure 1.7).

In implementing the blue economy, we must therefore understand the values and limits of each stakeholder (government, private and public), and how to align government objectives with global goals. To achieve this, the blue economy needs to provide the governing structures and platforms that will allow the shaping and implementation of new and innovative collaborations. It needs to ensure the security of the resource and the wider marine environment to guarantee the long-term integrity of the ecosystem.

Building on work previously undertaken by the Commonwealth Secretariat (Roberts and Ali, 2016) and further developed by the World Bank (Patil et al., 2016), it is possible to identify seven key thematic areas (**enablers**) that are vital for creating the conditions for growth and investment. These enablers, in no order of importance and with strong inter-relationships and synergies between them, are:

- a healthy, resilient and productive marine environment;
- integrated approaches to ocean governance;
- research, technology and marine information;
- sustainable finance and investment;
- education and capacity-building;
- existing and emerging business opportunities;
- maritime surveillance and enforcement.

The OECS Commission, with the support of development partners, has made considerable progress towards the development of this enabling environment and further work is planned. The progress to date is certainly laudable. However,

several systemic challenges persist that need to be overcome if the transition to a blue economy is going to be long term and sustainable. While critical challenges can be highlighted – regarding policy and legal frameworks, access to good scientific knowledge and data, ability to police illegal activity, awareness of local communities of the importance of the marine environment and engagement by civil society in planning and decision-making – chief among these is the human and technical capacity to effectively manage the region's maritime space.

Several initiatives are also underway to strengthen capacity across the OECS region, through a variety of different development partners. Critical among these are the Caribbean Regional Oceanscape Project (CROP) and the planned Unleashing a Blue Economy of the Eastern Caribbean (UBEEC) project, both financed through the World Bank. The Commonwealth is also providing support to develop the capacity of the OECS and member countries to effectively implement the Revised ECROP, national ocean policies and coastal and marine spatial plans. In addition, the Commonwealth has a long history of providing technical assistance to countries in the region to negotiate and settle outstanding maritime boundaries. Another relevant initiative is the implementation of the Commonwealth Blue Charter (CBC). The CBC works through a set of 10 action groups, each one championed by one or more Commonwealth countries and devoted to a particular ocean issue.

A broad range of complementary initiatives are highly relevant to realising the OECS' aspirations of a blue economy. While it is not possible to provide detail on all these initiatives, Annex A provides a summary of the key projects and programmes. In the context of the seven enablers listed above, Table 1.3 provides a snapshot of how each of the initiatives listed above and in Annex A contribute to strengthening the overall enabling environment for the blue economy.

Notwithstanding this broad portfolio of initiatives providing direct and indirect support to the OECS, it must be acknowledged that co-ordination and coherence of policies and activities continue to be an issue at the regional level. While initiatives such as the Global Environment Facility (GEF)-funded Caribbean Large Marine Ecosystem (CLME+) project are attempting to provide a platform for greater policy coherence and co-ordination across the wider Caribbean, to reduce overlaps and duplication of resources and effort the OECS Commission has an important role to play in strengthening policy coherence and capacity across the region.

1.5 Addressing capacity constraints to support the blue economy

The institutional capacity gap is a common theme across all blue economy sectors and requires strong public leadership, backed up by a coherent top to bottom planning and management regime. At a broad level, human capacity to implement the necessary policy reforms remains constrained across the OECS region and, in many countries, the clear authority to lead the strategic development of countries' maritime space is lacking. Notable exceptions include the recently created Ministry of Maritime Affairs

Table 1.3 Relative contribution of complementary initiatives to fulfilling the requirements for blue economy enablers

		OECS/World Bank		UNDP/ GEF	TNC	UNDP (Barbados and OECS)		FAO			Commonwealth
		CROP	UBEEC	CLME+	CCI-CBF	Blue Invest	Blue Lab	CC4FISH	StewardFish	CBP	Blue Charter
ENABLERS	Healthy, resilient and productive marine environment										
	Integrated approaches to ocean governance										
	Research, technology and marine information										
	Sustainable finance and investment										
	Education and capacity-building										
	Develop existing and emerging business opportunities										
	Maritime surveillance and enforcement										

UNDP = United Nations Development Programme; TNC=The Nature Conservancy; CCI=Caribbean Challenge Initiative; CBF=Caribbean Biodiversity Fund; CC4FISH=Climate Change Adaptation in the Eastern Caribbean Fisheries Sector; CBP=Caribbean Billfish Project.

Note: Responds to the requirements of the specific enabler in a comprehensive way

Partially responds to the requirements of the specific enabler

Responds to the requirements of the specific enabler in a limited way or not at all

and the Blue Economy in Barbados (non-OECS) and the Ministry of Blue & Green Economy, Agriculture, and National Food Security in Dominica.

OECS countries, the OECS Commission and development partners supporting this process can work collectively to devise new ways of working that leverage greater capacity from current systems to make change happen through, for example, increased regional co-operation, sharing of costs and public–private partnerships. The Commission and its partners are striving to establish a comprehensive enabling environment to support sustainable economic (including blue) growth in the OECS. However, several gaps remain largely unaddressed in the implementation of this enabling framework.

First, the OECS still lacks a robust framework to guide, manage and disperse the levels of finance required to restore and protect coastal ecosystems, support growth and innovation in economic sectors, and attract the levels of private sector investment necessary to sustainably grow the blue economy.

Second, despite an understanding of the economic potential of the blue economy and the desire to diversify and strengthen the economies of OECS member countries, little substantive progress has been made towards developing new sectors of the blue economy. The existing mature sectors require substantial investment and innovation to make them both more sustainable and profitable.

Many of these future opportunities have an essential technological component that will, in some cases, require substantial capital investment. Technology can also be deployed to address some of the barriers to developing a sustainable blue economy.

While considerable work remains to be done to implement the framework described above, it is beyond the scope of this analysis to address all of this in a comprehensive manner. Instead, the remaining part of the chapter focuses specifically on three key themes that are considered to have received little or no attention to date, and that the various policies, strategies and development plans outlined earlier broadly identify as priorities. These relate to deploying sustainable finance instruments, developing existing and emerging business opportunities to grow the blue economy, and applying science and technology to address key ocean sustainability challenges facing the blue economy.

1.6 Financing the transition to a sustainable blue economy

1.6.1 Financing needs for the blue economy

Several challenges constrain blue economy investments across the OECS region, and the required capital for financing the post-COVID-19 transition to a sustainable blue economy is beyond the resources available either to the OECS through CROP and UBEEC or to individual member countries. A critical challenge facing many OECS countries remains the persistent high levels of public debt, resulting in a drag on economic growth and development while constraining the allocation of resources for productive and new investments (CDB, 2018). These levels of debt are only likely to rise, at least in the short term, as a result of the COVID-19 pandemic. As of 2017, the majority of, if not all, OECS member countries had debt-to-GDP ratios in excess of

the generally accepted prudential benchmark for fiscal sustainability of 60 per cent. Although some Caribbean governments have been able to restructure national debt, these operations typically entail heavy social and economic costs. As a result, there are both fiscal and commercial challenges to taking on additional debt.

Considering the level of investment needed to finance the transition to a sustainable blue economy, increasing the amount of financial resources available to support the blue economy will require new approaches to draw on the existing pools of development finance (CDB, 2018). One of the major challenges facing OECS countries will therefore be to develop the financing structures, business models, partnership arrangements and sustainable operating mechanisms for sustainable blue economy investment projects to be implemented.

To transition to a sustainable blue economy, it is necessary to have in place, among others, mechanisms that will provide long-term and reliable financing to support blue economy activities including:

- conservation, restoration and sustainable management initiatives for marine and coastal resources;
- investments to improve the sustainability and profitability of existing sectors, including fishery improvement projects, efforts to recognise the true economic value of marine ecosystem services and projects that link ocean ecosystems to climate change adaptation; and
- investment to support the development of emerging sectors (such as ocean-based renewable energy and 'blue biotechnology') by bridging the gap between the high upfront costs and uncertainty associated with such emerging sectors and the likely delayed financial returns that may be an impediment to companies investing in these sectors.

Taking these actions would support de-risking' the business environment to an extent that entrepreneurs and investors perceive more certainty and have the confidence that there are solid opportunities to achieve the requisite scale and competitiveness that will make new innovative blue economy business models financially viable and sustainable.

1.6.2 Mobilising finance in the OECS

The challenges associated with sustainably financing the blue economy transition are not unique to OECS countries, and a considerable and growing body of work exists around how to mobilise resources to support small island developing states' (SIDS') transition to a more diversified ocean-based economic model (e.g. CDB, 2018; de Vos and Hart, 2020; UNEP, 2021; UNEP, 2022). The concept of sustainable finance is already well established in the OECS. For example:

- The Sustainable Energy for the Eastern Caribbean (SEEC) programme is a multi-partner, blended finance trust facility that supports investments in renewable energy and energy efficiency, as well as technical assistance for institutional strengthening and project support.

- The Sustainable Energy Facility (SEF) for the Eastern Caribbean is a blended finance facility designed to contribute to the diversification of the energy matrix in the Eastern Caribbean by promoting the implementation of energy efficiency and renewable energy technologies. SEF is operated through the Caribbean Development Bank (CDB), financed through loan, grant and contingently recoverable grant resources as well as additional capitalisation from the Green Climate Fund.

Both initiatives are almost exclusively publicly financed with little or no private sector investment.

In terms of the blue economy, two initiatives have the potential to mobilise public and private sector resources:

- Through the United Nations Development Programme (UNDP) (Barbados and the OECS), work is underway to deploy a blended finance facility to support the blue economy. Blue Invest is planned as a US$10 million technical assistance and investment facility to accelerate project identification, formulation, financing and implementation. It will fill the capability gap in the technical and financial structuring of an investment pipeline of blue economy projects by leveraging existing grant programmes from development partners; development finance institutions' financing; and its own financial instruments and incentive schemes to crowd in private capital.

  If effectively deployed, Blue Invest could potentially mobilise at least US$50 million of investment in projects in priority blue economy sectors over a four-year period to support three Eastern Caribbean countries (Barbados, Grenada and St Vincent and the Grenadines) by catalysing available finance into blue economy-linked investments.

- Similarly, the planned World Bank UBEEC project aims to direct investments into blue economy activities. This initiative will support a regional grants programme to improve the resilience of MSMEs, helping them ensure business continuity, create jobs and mitigate the socio-economic impacts of COVID-19; and fisheries insurance to support fishers' livelihoods against extreme climatic events. This initiative is also designed to enable private sector-led growth by financing a Project Preparation Facility for resilient infrastructure development in tourism, fisheries and aquaculture, and waste management.

While the above initiatives are a positive and important start, these financing mechanisms need to be institutionalised at the country level and will require regional institutional support from regional and national financial institutions such as the CBD and the Inter-American Development Bank (IDB).

1.6.3 Mobilising domestic resources

According to a recent survey by the Economist World Ocean Initiative (The Economist Group, 2020), as many as nine out of 10 institutional investors are interested in financing the blue economy. Growing appetite in the venture capital

and impact investment communities for ocean investments has also resulted in the establishment of a number of new funds in recent years. Thus, the opportunities to leverage domestic resources by blending different types of finance with private equity are promising. However, while there is an adequate supply of investment capital available to support blue growth, what is missing is a robust pipeline of investable projects, particularly in developing countries.

Government's ability to design and fund such a project pipeline is extremely limited. Instead, its role in the transformation process must be to facilitate private sector development by easing the process of doing business. According to the Caribbean Export Development Agency, approximately 65 per cent of employment in the Caribbean Forum (CARIFORUM) region is supported by MSMEs, including the seafood industry. In the context of OECS countries, high-value sustainable blue economy products present a viable option for the development of MSMEs within the blue economy value chains. Finance for MSMEs will be a key aspect of this enabler. There is, therefore, a need to examine the mechanisms available to government to encourage start-up MSMEs, to assist with capacity and technology development and to define the pathway to an effective blue economy investment promotion strategy.

There is a need to reduce impediments for private sector investment and secure innovative and sustainable finance. Building on the work undertaken for the OECS Blue Economy Investors' Roundtable and Partnership Forum, to develop the Blue Investment Portfolio, the OECS Commission and individual governments need to work with the business sector to identify and develop investment opportunities. This collaboration would focus on resolving the major challenges facing the MSMEs in the blue economy – marketing, product development, operational management and finance. To this end, the OECS Blue Economy Roundtable has already convened two meetings (September 2020 and September 2021 respectively) as a forum to enable development partners, private sector entities and project developers to showcase bankable investment plans to support the blue economy transitioning. The momentum behind this and related initiatives must be maintained and built on to fully engage the private sector and investment community to mobilise the necessary resources to support a long-term and sustainable blue economy transition.

A key focus of such an effort should be on how to support pioneer investors through fiscal incentives and de-risking (e.g. through seed funding to catalyse investment, the provision of needed infrastructure or developing the skills of workers and capabilities of local suppliers). In this regard, the role of regional and domestic finance institutions such as national banks, the CBD and the IADB will be critical, since they can provide support in the form of concessional loans and other preferential financial instruments that can de-risk and provide guarantees for investment.

1.7 Economic opportunities in the blue economy

While there is a need for broad investment in the full range of blue economy sectors, through its Blue Investment Portfolio the OECS has expressed a specific interest in the development of the following blue economy areas:

- fish processing and added value (including aquaculture development);
- blue biotechnology;
- ocean energy;
- waste management.

Efforts must therefore focus on supporting the development of, and investment in, these sectors.

1.7.1 Fish processing and added value

Coastal fisheries in the Eastern Caribbean have suffered sharp declines in recent years, with catches of conch, lobster and some demersal fish all dropping. The reasons for this vary but include the existence of open access fisheries with no resource allocation; poor stock management owing to lack of resources, human capacity and scientific knowledge; illegal, unreported and unregulated (IUU) fishing, both at the national level and by fishers from other countries; and unsustainable fishing practices such as harmful gear and overcapacity as a consequence of subsidies. Without comprehensive investment to address these drivers of degradation, opportunities to increase returns through increasing yields remain limited.

Opportunities do exist, however, to capture more value from the fishery value chain, through:

- increasing operational efficiency by reducing the cost of fishing and delivering fish through the supply chain, improving profit margins and thus magnifying the returns from fishing as a whole; and
- increasing market value through improved market access, certification, branding and long-term partnerships that return more value to fishers

Fish is a highly perishable commodity and hence susceptible to high post-harvest losses at all stages in the value chain. Minimising these losses must be a key strategy to increase revenues and food security without needing to increase catch volumes. Improving sanitary standards that reflect international standards can also help countries penetrate export markets and expand their trade.

In many developing countries, processed fish typically outweighs fresh fish by volume and number of traders. Furthermore, these types of processing typically produce little waste when compared with fillet processing. Therefore, developing actions aimed at adding value to local products should also be a component in the strategy that the fisheries sector needs to develop to meet current and future economic challenges.

The potential for innovation in the use of fish by-products is also high for the food, biotechnological, fashion and cosmetic industries. This, however, will require access to affordable R&D technologies, which OECS countries lack and may not be able to afford in the short to medium term.

In 2020, the United Nations Conference on Trade and Development (UNCTAD), the OECS Commission and the Secretariat for the Convention on International

Trade in Endangered Species (CITES) jointly established a pilot project on seizing the trade and business potential of Blue BioTrade products for promoting sustainable livelihoods and conservation of marine biodiversity in selected OECS countries (the Blue BioTrade Project) to support the development of Blue BioTrade through the commercialisation of goods and services derived from marine biodiversity that adhere to a set of sustainability guidelines known as the 2020 BioTrade Principles and Criteria. The value chain selected for this pilot project is queen conch (*Strombus gigas*) in the first phase and sea moss and sargassum seaweed in the second.

Impact of fisheries subsidies on the OECS

Notwithstanding the need for economic diversification, OECS communities will remain dependent on fisheries for food security and socio-economic development. Long-term sustainable benefits, however, will be possible only if management of these resources improves significantly. For example, there is universal recognition that subsidies result in overexploitation of resources, with concomitant environmental impacts (Bahety and Mukiibi, 2017).

Assessing the effect of the elimination of subsidies in SIDS is complex, as it depends on multiple factors (Haughton, 2001). On the one hand, reducing or removing subsidies may make OECS countries more competitive by reducing the price disparities subsidies create. However, as noted above, the volume of fisheries exports from OECS is extremely small - they are net importers and thus may be adversely affected by increases in import prices.

On the other hand, although many subsidies are trade-distorting, there is certain support to help fishers in SIDS overcome the high costs associated with the commercial activity. This includes, for example, access to credit to modernise fleets and equipment. Moreover, subsidies to meet quality and food safety standards need to be considered to help these firms access global markets. To reach their full potential in fisheries trade, and in particular the promotion of value-added activity, OECS countries will need to invest in a variety of within- and cross-sector enablers.

As such, it is critical for OECS countries that any disciplines agreed do not hinder their ability to develop the fisheries sector. Most domestic fleets in the region are small, and comprise mainly small, open day vessels. To allow for the development of fleets within sustainable levels, some flexibility will be required, to allow certain subsidies while curtailing harmful subsidies that contribute to overcapacity and depletion of fisheries resources (Bahety and Mukiibi, 2017). Any existing trade preferences should be maintained to protect products from tariff escalation. This requires policy space to enable the development of landing, processing and marketing facilities through the provision of subsidies.

1.7.2 Aquaculture development

Globally, aquaculture is a multi-billion dollar industry, but the Caribbean has yet to tap into its true potential to expand marine and freshwater aquaculture. This is because the sector is not well developed in the region. The CRFM has identified the promotion

and development of aquaculture as one of its priority areas, with the formulation of aquaculture development policy and legislation as key areas for attention. A 2014 FAO study found that aquaculture could increase total fish production in CARICOM states by 30 per cent within 10 years if essential investments were made in enabling aquaculture policy and legal frameworks, supported by applied research, capacity-building and information (FAO, 2014).

Recommendations for developing an aquaculture industry

While limited aquaculture is practised in several OECS countries, the sector has never operated at scale. However, it offers significant potential for diversification, increased employment and reduced fishing pressure on existing wild fish stocks while at the same time addressing issues relating to food security and offering an additional source of export revenue. Below are a variety of strategic-level recommendations that could assist in developing an aquaculture industry.[4]

- **Initial sectoral prioritisation: T**he products of aquaculture are globally traded, and it is unlikely that most OECS countries will be able to compete on the global market on the basis of price. Therefore, aquaculture development should be based on products for the domestic/regional market or niche products that attract a higher price, such as eco-labelled products.
- **Management and regulation frameworks based on the Ecosystem Approach to Aquaculture:** At this stage, it is not clear to what extent national policy/legal frameworks specifically provide for aquaculture. A comprehensive aquaculture policy based on the Ecosystem Approach to Aquaculture will allow the industry to develop within a framework that provides economic and environmental sustainability. Management, regulation and policy should be based on sound scientific principles and evidence.
- **Coherent cross-policy activity:** The blue economy framework should be used to assist in the development of clear action plans, and activities should be rationalised under different policy initiatives.
- **Integrating planning of sectors within the blue economy:** Considering the possibilities of multi-sector development in integrated scenarios will identify overlap in actions (e.g., in relation to research or local infrastructure), address possible conflicts and develop dialogue on the comparative costs and benefits, within the context of sustainable development.

Feasibility of an aquaculture sector in OECS countries

The development of an aquaculture sector across the OECS is not without its challenges. Previous experience from several OECS countries does demonstrate that there is both an opportunity and demand for farmed produce. However, future development and expansion of the sector will require strong regulatory, financial and technical support.

4 For more detailed information on the development of this sector, readers should refer to Volume 2 of the Commonwealth Secretariat's Blue Economy Report Series (Hughes et al., 2016).

On this basis, one approach would be to start at the low-complexity end of the spectrum of development and to allow the aquaculture industry to grow organically (supported by government investment via fiscal incentives and commercial policies) and to move up the complexity spectrum as local capacity and infrastructure develop. 'Low trophic-level' species that offer the potential for significant aquaculture operations in developing economies include seaweeds, sponges, sea cucumbers, corals and cultured live rock.

If OECS countries wish to pursue the development of more complex organisms (such as finfish and shellfish), this will demand greater investment in infrastructure, R&D, capacity and a range of technical assessments and studies to inform future development options. A substantial investment partner will undoubtedly be required to reach scale. Having said that, there are clearly examples of successful aquaculture of higher trophic-level species such as tilapia and rock lobster.

1.7.3 Blue biotechnology[5]

The term biotechnology is widely employed and has different connotations. The OECD provides a useful and all-encompassing definition:

> *The application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services* (Day et al., 2016).

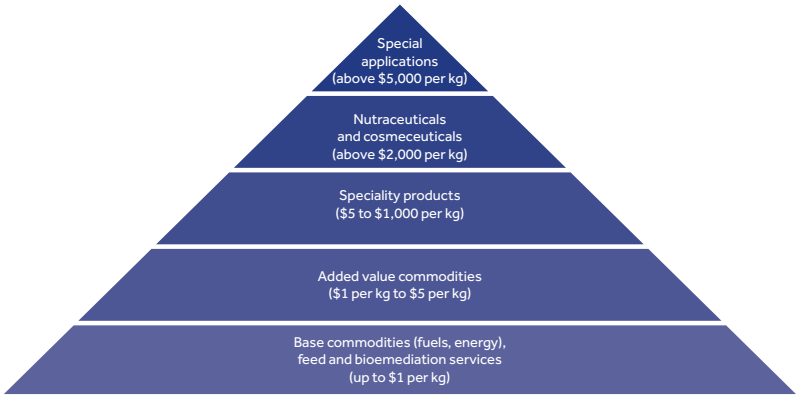
The limited biotechnology activities in OECS countries to date have focused on the use of fish waste and sargassum seaweed to produce novel products such as fertilisers, nature-based plastics and animal feedstuffs (Thompson et al., 2020). Further work on sargassum is anticipated under the Blue BioTrade Project discussed earlier. However, marine biotechnology encompasses a wide range of activities, from bioprocessing of harvested materials (fish, algae, etc.) to cultivating marine microbes. Some examples include:

- health, beauty and personal care products (cosmeceuticals);
- bioactive compounds and pharmaceutical products;
- food products and additives;
- industrial products and processes, such as novel sources of enzymes and polymers;
- algal-based biofuels.

Figure 1.8 shows a range of different products and services that can be generated from marine resources, categorising them on the basis of their commercial value, from top-end pharmaceutical compounds to low-value bioenergy produced from organic waste. Many of these products are considered to be 'special application', products described as low volume high value; at the other end of the scale, base commodities

5 For a more detailed overview of this sector and its possible development, readers should refer to Volume 5 of the Commonwealth Secretariat's Blue Economy Report Series (Day et al., 2016).

Figure 1.8 Value pyramid of products obtained from the marine environment



Source: Day et al. (2016).

are invariably high volume low value. In the OECS, it would make sense to focus initially on the latter category since the technological, financial and capacity demands will be much lower.

Lessons from other countries may be useful in terms of scoping and framing an emerging biotechnology sector in the OECS. Iceland, in particular, provides an interesting model, having invested heavily in infrastructure, research and innovation, and product development through a public–private partnership arrangement and the establishment of a platform for small and medium enterprises (SMEs). Such models could be used at the regional level, perhaps using innovative financing as the mechanism to attract funds. A regional R&D platform also would be more attractive to international researchers and investors. The OECS Commission could provide an effective focal point for locating such capacity.

Feasibility of a blue biotechnology sector in OECS countries

Whereas the production of some biotech products, such as bulk chemicals and pharmaceuticals, may not be practicable because of lack of land availability, investment or infrastructure, the production of niche products such as cosmeceuticals and nutraceuticals could be commercially viable.

In the case of many OECS countries, these could benefit from exploiting linkages with the tourism sector – especially the 'wellbeing tourism' subsector – to connect to international markets. This approach has been successful in Iceland, where cosmetics (skincare products and treatments) based on Icelandic algae grown in photo-bioreactors are marketed as health products at local spa resorts. Although bioprospecting for pharmaceuticals is a possible option with the involvement of external partners, niche products, based on biological resources from an individual SIDS, developed, produced and marketed worldwide, provide a realistic opportunity to generate high-value jobs and diversify the economy of the country.

1.7.4 Ocean energy[6]

Sustainable energy provision is fundamental to the transition to a low-carbon economy, and the basis for progressing towards sustainable development globally.[7] As such, renewable energy will play a key role in the decarbonisation of global energy systems in the coming decades.

The development of marine renewable energy (MRE) in the Caribbean can support achieving renewable energy objectives and provide energy security through greater independence from imported hydrocarbons. Regional co-operation enables strategic use of capacity, mobilisation of donor resources and development of a stronger collaborative vision to support national-level action. There has been notable progress in this regard through CARICOM, resulting in the production of a Regional Energy Policy, followed by the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS), which aims to provide CARICOM member countries with a coherent strategy for transitioning to sustainable energy.

A broad range of different technologies exist for the generation of renewable power from marine sources, although most of these (apart from wind) remain unproven commercially. They are offshore wind (fixed and floating), wave, tidal (rise and fall, currents), ocean currents, ocean thermal energy conversion (OTEC), salinity gradients (osmosis) and marine-based biomass (e.g., algae). There is also the feasibility of producing hydrogen from seawater using solar power, without the need to desalinate the water first, representing a significant shift in the low-carbon energy balance that would pave the way for hydrogen-powered vehicles and ships (García de Jesús, 2019).

While MRE may be feasible in the long term, it also faces significant challenges globally, as it is an emerging sector and demonstrated commercial success is not yet evidenced in most technologies (Greenhill et al., 2016). Notable challenges relate to access to financial capital, institutional capacity to plan and develop renewable energy projects, local infrastructure and human capacity for engineering works. Solar and wind have proved reliable and adaptable solutions for generating clean electricity in many locations, and their costs have decreased dramatically over the past decade. As a result, MRE is struggling to find its place in an already crowded energy marketplace.

This notwithstanding, with continued political support for renewables as a source of clean, secure and reliable energy, technologies are expected to develop in the coming decade, and to become increasingly attractive and cost-competitive. As such, in the long term MRE may be a realistic consideration for the Caribbean region.

6 For a more detailed overview of this sector and its possible development, readers should refer to Volume 4 of the Commonwealth Secretariat's Blue Economy Report Series (Greenhill et al., 2016).

7 Sustainable Development Goal (SDG) 7 highlights the importance of sustainable energy and industrial development, with particular reference to SIDS.

Feasibility of marine renewable energy in OECS countries

While MRE is generally considered a realistic medium- to long-term energy option for many SIDS, in the case of the OECS it is questionable whether it can be competitive against the existing options that several countries are pursuing (particularly geothermal, wind, hydro and solar). This is not to suggest that it should not be considered in the overall portfolio, but rather that it seems doubtful that it will be cost-effective against these other options. Nevertheless, there may be an argument for small-scale scalable MRE options for off-grid areas that can address the current and future power needs of remote communities.

1.7.5 Waste management

The past few decades have seen waste problems increase significantly, driven by population growth and changing consumer behaviour. While plastic represents only a fraction of the solid waste generated, it is a major constituent of marine and coastal litter and has been recorded widely throughout the Caribbean; after the Mediterranean, the Caribbean is one of the most plastic-polluted basins in the world, with much of the waste originating from within the region (Diez et al., 2019). According to Forbes (Ewing-Chow, 2019), of the top 30 global polluters per capita, 10 are in the Caribbean region, including Anguilla, Antigua and Barbuda, Grenada, St Kitts and Nevis and Saint Lucia. This is almost certainly a function of mass tourism rather than domestic consumption but nonetheless illustrates the scale of the challenge facing OECS countries.

In the context of the OECS region, while municipal waste collection services cover 90-95 per cent of households, these facilities do not focus on on-site segregation, reduction, end-of-life-use processing or recycling. For the most part, there is no source separation or collection of recyclables, nor any readily accessible local markets for recycled waste, while the cost of managing solid waste is high.

However, business opportunities do exist to demonstrate that segregation can be effectively practised on a large scale in an island context. Given the economies of scale that an OECS-wide approach presents, waste management businesses in areas such as recycling of scrap, electronics, plastic, rubber and wastewater should be explored.

Many of the islands are seeking to address the issue of plastics pollution but effectively managing solid and liquid waste remains challenging. Opportunities therefore exist to:

- improve waste management practices, thereby reducing the amount of waste sent to landfill. Companies adding value to plastic waste by cleaning or processing it have two main revenue streams: a tipping fee from municipalities or property owners and revenues from the sale of recycled materials. Most of the revenues in emerging markets come from the latter;
- replace plastic (particularly single-use plastics) with more sustainable alternatives, some of which could be created using organic marine materials.

1.8 Engaging with the private sector to grow the blue economy

At present, capacity to fund the scale-up of blue economy activities in the public sector across the OECS region is low. Growing the blue economy requires further engagement with development partners and, in particular, the private sector. However, responsible private capital cannot be expected to mobilise in support of the blue economy at scale until the risks are reduced through a robust enabling environment and improved governance (tenure, fiscal, financial, legal, etc.). To this end, there is a need to reduce impediments for private sector investment and secure innovative and sustainable finance.

Both the OECS Commission and individual governments need to work with the business sector to identify and develop investment opportunities. A key focus should be on how to support pioneer investors through fiscal incentives and de-risking (e.g., through seed funding to catalyse investment, the provision of needed infrastructure or developing the skills of workers and capabilities of local suppliers). Where necessary, governments could engage in limited direct economic activity as part of a 'crowding-in' process.

Key to developing these sectors in the OECS is recognition of the important role of MSMEs, since they can bring innovative niche products to market and play a significant role in value chains as they touch many cross-cutting areas in society. There is, therefore, a need to examine the mechanisms available to government to encourage start-up MSMEs, assist with capacity and technology development, and define the pathway to an effective blue economy investment promotion strategy. Several mechanisms could be used to incentivise MSMEs, such as tax incentives, training or seed infrastructure investment.

1.8.1 Building regional blue economy business capacity

Although the development of individual businesses will generally take place at the national level, developing the critical mass needed to accelerate investment across the blue economy will be beyond the scope of individual countries and would benefit from a more co-ordinated regional approach.

For example, the successful development of aquaculture will require production of good quality seed, which requires hatcheries. The establishment and greater promotion of centralised trans-national facilities would be a significant benefit to any emerging industry since it would share the costs across different countries. Similarly, taking a regional approach to monitoring, disease management programmes, biosecurity control (e.g. standards for importing seed or broodstock), food safety standards and genetic resources would offer significant benefits, including reduced costs and increased international acceptance and confidence in products from the region.

While there are options for basing the development of new sectors on expertise, technology and investment from outside the OECS/Caribbean, developing a new sector based solely on expatriate expertise poses risks for the sustainability of that sector. The future development of the blue economy across the OECS region should

instead rely on local workers becoming involved in a sector that is largely new to the area. However, a critical barrier to this is the lack of technical training courses and of the necessary research capacity. Pulling together and funding public/private commercial/academic partners across national boundaries could make the OECS region a significant contributor to aquaculture and biotechnology development, with significant benefits for its member countries.

Options should therefore be explored to establish partnerships between local and foreign companies and training/research institutes that would utilise expatriate expertise at the outset but then rapidly develop local capacity to sustain the future of the sector. Access to technology can also be improved in the short term by establishing demand-led and responsive relationships/structures (e.g., technology extension services delivery structures) that facilitate faster adoption of already available technology (which is more often the challenge, as opposed to research to generate virgin technology).

Moving forward, government leaders, civil society organisations, funders and other blue economy stakeholders will benefit from the regionally grounded opportunity areas to narrow the field of potential blue economy initiatives to those that contribute to larger systems change and are most likely to succeed given present conditions. But how exactly can governments kickstart and scale this economic growth? The answer to that question can be found in building blue economy or ocean clusters.

1.8.2 An OECS blue economy cluster

Ocean clusters are geographic concentrations of similar or related firms – such as shipping, seafood, marine technology and/or port operations – that share common markets, technologies and worker skill needs. They are often linked by buyer–supplier relationships and operate in close interactions with one another directly and through multiple networks. Linked to this are the technology providers who develop the tools and equipment for the companies in the network. In some cases, ocean clusters have emerged as organisational entities that aim to enhance competitiveness and collaboration among their ocean/maritime company participants, related institutions and other stakeholders.

Numerous clusters have developed in recent years, notably in Canada, Iceland, Norway, Scotland and the USA. The idea behind a cluster is to maximise tacit knowledge, innovation and business opportunities through an interactive network. By matching industry investment and facilitating collaboration and close alignment with the business environment, academia, science, local communities and government, ocean clusters are able to support sustainable ocean innovation through building a robust business network that is well connected and equipped to rapidly innovate, commercialise solutions and deliver on the growing ocean opportunity. This can be through:

- creating a new model for ocean growth, and reducing risk for companies;
- increasing data exchange across ocean stakeholders to maximise value and minimise duplication;

- strengthening connections to develop commercial, sustainable ocean solutions;
- building an inclusive and highly capable workforce; and
- developing solutions that also address ocean health.

While the examples above are all from large, developed economies, the small size of SIDS may be an asset in supporting the blue economy. The small population size in many island nations means momentum can build quickly as personal relationships can set and drive collaborative efforts. In these settings, convening stakeholders and getting support and co-operation for projects or initiatives can be catalytic (Hansen, 2020).

In the context of the Caribbean, the Compete Caribbean Partnership Facility (CCPF) – a multi-donor programme focused on private sector development[8] – is poised to invest US$4.5 million to support private sector-driven projects in the blue economy in the Caribbean. As part of the programme, CCPF has launched an initiative to provide support for the development of economy-focused private sector cluster initiatives that can help Caribbean firms grow and diversify to better support post-COVID recovery and building resilience.

Examples of what CCPF could finance include adoption of technology across seafood value chains to enhance their product (e.g. fresh fish instead of frozen fish, or value-added products from fish processing); traceability across the blue economy by supply chains (seafood, fish, etc.); training and changes in practices across supply chains for the adoption of sustainable practices; adoption of public health measures in blue economy-based sectors; decarbonisation of supply chains; circular economy and cleantech supply chains; and tourism initiatives that monetise conservation.[9]

By developing new processes and products, promoting international connections, generating opportunities for MSMEs to scale and integrate into Caribbean and global value chains, and creating new employment opportunities, an OECS blue economy cluster would be well positioned to take advantage of these new opportunities in a sustainable manner.

In light of the ongoing work being undertaken by the OECS through CROP and the planned UBEEC projects, consideration should be given to establishing one or more OECS-wide blue economy clusters that could focus on both core and emerging blue economy sectors. The initial focus for such a cluster in the OECS region should be to:

- build a shared competitive advantage for OECS members by developing and commercialising technologies, and positioning the entity as a regional ecosystem for technology and capability development;
- position firms, in particular SMEs, to scale and integrate into regional and global value chains, transition to high-value activities and become regional market leaders;

8 CCPF is finance by the IADB, the Government of the UK, the CDB and the Government of Canada.
9 https://www.competecaribbean.org/blueeconomy/

- foster a critical mass of growth-oriented firms and strengthen connections and collaborations between private, public and academic organisations;
- transform the OECS into a Caribbean hub for ocean innovation and collaboration.

1.9 Developing inter-sectoral linkages in the blue economy

Traditional blue economy sectors have tended to be developed in isolation of, or even in competition with, each other. However, taking a holistic approach that recognises the interdependencies between different sectors can catalyse and add value to the socio-economic benefits each sector contributes. For example:

- In some countries, the tourist market for fish products is far stronger than the domestic market. Increasing use of locally produced fishery products by the tourism sector could contribute to saving foreign currency, improvements in the balance of payment deficit and reduced vulnerability to rising food prices and other forms of external economic shock. This needs to be considered when determining the extent to which the fisheries sector contributes to region's economies (CRFM, 2016).
- Similarly, many countries have strong linkages between tourism and marine conservation, with some resorts operating and financing *de facto* marine protected areas (MPAs). Furthermore, MPAs being major tourist attractions in themselves, user fees from tourist visitors can be a critical source of revenue to support management.
- In port facilities, renewable energy sources such as solar and wind can be used for shore power for ships. This can generate important revenue for the ports while reducing operating costs for ship owners and reducing air emissions from running ships' engines. At a broader level, such infrastructure could support the transition to greener forms of shipping based on electricity.
- Biotechnology can be applied to solve critical challenges (e.g., bioplastics and fish waste processing), thereby reducing waste handling costs and waste taken to landfill.

Opportunities to strengthen inter-sectoral linkages will vary from sector to sector and between countries. However, broadly speaking, a focus on raising awareness across sectors on the blue economy and its benefits would be an important first step in this process. A blue economy cluster, as discussed in the previous section, could be a valuable mechanism to bring different sectors together with a common goal. As an initial step, it is suggested to put in place a small number of pilot initiatives within key economic sectors to make it possible to test the approach and adapt it as necessary to local conditions.

1.10 Applying science and technology to address ocean sustainability challenges

One of the key areas for future focus for the OECS and its member countries should be how to deploy technology to facilitate the blue economy transition, since

considerable potential exists to support blue economy innovation through science and technology. Emerging technologies are increasingly accessible as they advance to commercialisation in parallel sectors or more developed nations (Hansen, 2020). Recent developments in digital technologies, as discussed in more detail in Chapter 3 on the OECS and the Digital Economy, including mobile technologies, smart networks, drones, remote-sensing and distributed computing, as well as disruptive technologies, such as blockchain and artificial intelligence (AI), are serving as the premise for a 'digital revolution', whereby management of resources can potentially be highly optimised, intelligent and anticipatory (Blaha and Katafono, 2020). New surveillance and product tracing technologies make it possible to crack down on illegal fishing. Remote vehicles embedded with sensors can monitor the ocean and warn of changing conditions, and machine learning and AI can help make sense of the large volumes of ocean data.

In the context of the main blue economy sectors of capture fisheries, tourism and shipping, those technologies aimed at improving traceability of seafood and improving tradability of fish products are likely to be the most promising areas for further investigation for OECS countries in the immediate future, since they can create new incentives for more sustainable practices.

1.10.1 Marine science and data

Marine planning and management decisions should be based, as far as practicable, on the best available information concerning the natural, social and economic processes that affect ocean environments. Decision-makers should be able to obtain and understand quality science and information in a way that facilitates sustainable use of marine resources.

Despite historically having some local capacity for marine environmental research and monitoring, indigenous marine research in OECS countries has not been well supported during the past 20 years or so. Existing research capacity has declined, leaving a strong reliance on the University of the West Indies and overseas marine research agencies, such as the USA's National Oceanic and Atmospheric Administration (NOAA) and the UK's Centre for Environment, Fisheries and Aquaculture Sciences (CEFAS) and National Oceanographic Centre (NOC). This strong reliance on external providers has resulted in indigenous marine science capacity being poorly developed, owing to a lack of funding and research institutions. This in turn has led to chronic gaps in the technical capacity for marine research, planning and decision-making.

Although some broad-scale knowledge of topography, bathymetry and marine landscapes in the OECS region does exist, there is a pressing need to validate and update this information to support future decision-making. Moreover, while some data relating to habitats and biodiversity in many OECS countries have been collected and documented, detailed and consistent information concerning the habitats and biodiversity throughout the OECS remains lacking. Information relating to the deeper waters of the continental shelf to the east of the region, in particular, is largely absent. Similarly, information concerning the presence of mineral and hydrocarbon

potential is limited and significant work and investment are required to acquire the information needed to support decision-making concerning future development opportunities.

Various avenues exist, or can be created, to fill essential data gaps if a coherent and integrated approach is developed. Understanding where the real gaps in data are will provide a basis for deciding what areas are worth focusing on in the short to long term. To address this need, the OECS Commission has already prepared and adopted a regional Marine Scientific Research Strategy (2016) with an associated code of conduct for undertaking marine scientific research and data standards. However, while this strategic framework does provide the basis for developing a regional approach to marine scientific research, it requires considerable resources to implement.

Facing the disadvantage of a limited range of solutions and resources to address such challenges, states often require specialised gathering and diagnostic methods, which are extremely expensive, difficult to achieve and highly dependent on foreign expertise. However, the rapid development of technology may offer some solutions that the OECS could benefit from. Over the next decade, satellite imaging, remote sensing, big data and AI will generate unprecedented amounts of ocean information. According to Stuchtey et al. (2020), it is now technically possible to sample the ocean on its true spatial and temporal scales with a remote sensing network covering the physical, biological, ecological and chemical properties of the global ocean surface using a broad range of sensors and platforms. The connection of intelligent devices into an 'Internet of Things' is moving from land to sea, allowing for an ever-more-complete picture in near real time.

Recent innovations are also improving our capacity to translate these data into useful information and advanced processing techniques, coupled with new visualisation portals, enabling a wide array of decision support tools. This explosion in new ocean data has the potential to reshape how we understand and manage the ocean. The urgent challenge is to ensure these data are available and useful to ocean managers (Leape et al., 2020).

At a more local level, opportunities exist to engage civil society in 'citizen science' programmes if the right frameworks to catalyse local community engagement can be created.

1.10.2 Innovative technologies

Satellite technology

The proliferation and rapid development of low-cost, satellite-based remote sensing platforms now means that monitoring activities across large areas of ocean space in near real time is becoming affordable for many countries. Imaging satellites can track changes to coastal and ocean ecosystems, and can be used to understand coastal development patterns, monitor nutrient run-off and track pollution from ships. Increasing access to satellite technologies has also enabled real-time, precise vessel tracking. With the advent of GPS-enabled smartphones, even small-scale fishers can be monitored.

International initiatives such as Global Fishing Watch[10] use satellite tracking to monitor the activities of fishing vessels to determine which ones are fishing, based on the identity, speed and direction of broadcasting vessels. The tool uses a global feed of vessel locations extracted from Automatic Identification System (AIS) tracking data, revealing the movement of vessels over time. Using AI, the system automatically classifies the observed patterns of movement as either 'fishing' or 'non-fishing'.

By combining satellite technology with innovative tracking and analysis tools, Caribbean countries could therefore create a system that will help the region close the gap on illegal fishing and related criminal activity. These facilities already exist, for example within the Commonwealth, and can be shared with Caribbean countries if development partner funding can be secured at an early stage.

Drones and autonomous vehicles

Autonomous vehicles and drones are pilotless craft that operate through a combination of technologies, including computer vision, AI and object avoidance technology. They may operate above, on or below the surface of water. Autonomous underwater vehicles and swarms of sensors can gather visual and chemical information on vessels. Drones and buoys equipped with acoustic sensors are particularly powerful in understanding human activity. Drones offer similar imaging to satellite imagery but at a more granular level. They are a cost-effective way of reaching offshore areas, allowing managers to see what is happening at a distance through real-time video streaming.

Within the maritime sector, drones can be used for tasks such as stock assessments, maritime safety support or surveillance of MPAs or exclusive economic zones (EEZs), and have the technical capacity to be used in court cases to provide visual or audio records of events. Additionally, conservationists are combining drone technology with technologies such as GIS to monitor and track animals on land and at sea, or to remotely map potential conservation areas (Girard and Tu Payrat, 2017).

Artificial intelligence

There are a wide range of existing definitions for AI; while a consensus definition remains elusive, AI in general can be said to be a task performed by a program or a machine that, if it were carried out by a human, it would be assumed that it had been accomplished by application of intelligent thought.

Within the field of AI, machine and deep learning are frequently used for a wide array of environmental management projects to predict patterns of anything from predicting the future effects of climate change to improved efficiencies at sea. When combined with the data collection capabilities of autonomous vehicles, AI can be used to process and interpret large quantities of remotely collected data for rapid use by decision-makers.

10 https://globalfishingwatch.org

Blockchain technologies

One of the most discussed technologies at present is blockchain technology, which is likely to significantly improve traceability and modify stakeholder behaviour along the fisheries value chain (Jouanjean, 2019). A blockchain is a secure digital ledger of transactions duplicated and distributed across a network of computer systems. Each 'block' in the 'chain' contains numerous transactions, and every time a new transaction occurs a record of that event is added to all of the participants' ledgers, meaning that, if one block in one chain were changed, it would be immediately apparent to all users.

Consumers are increasingly calling for fully traceable seafood that does not come from illegal fisheries or those that engage in human rights abuses. Wholesale and retail seafood buyers are asking for improvements in transparency and traceability to reduce the risk of their brands being associated with dubious and illegal activities. Blockchain also has potential to significantly decrease illegal activities by supporting secure data transactions for traceability and sales; blockchain technology can help track the journey of a single fish, recording information regarding where it was. As a result, many in the fisheries supply chain are increasingly looking to blockchain, and other distributed ledger technologies, to support supply chain traceability (Leape et al., 2020).

There is at least one example (Pacifical) of a client of the Marine Stewardship Council label that uses blockchain to support the documentation of the chain of custody required to maintain certification with regard to the integrity of the product bearing the logo of the ecolabel, particularly in the case of purse-seine caught tuna certification (Blaha and Katafono, 2020). Typically, this also involves tagging individual tuna on capture and recording key data as the fish passes through the supply chain. Most applications of this nature use traceability techniques such as genetic tools, sensors, and electronic tags or QR codes on the tuna product packaging that can be used to communicate the provenance story of the fish and track fish through the supply chain.

To date, all the blockchain traceability projects in the seafood industry have been led by non-governmental organisations and/or the private sector. These initiatives show that it is possible to have a blockchain-based system operating at a micro level for specific seafood value chains. However, to date there has been no example of an entire industry agreeing to use the technology to improve value chain transparency in that industry.

In the context of the OECS region, the Government of Barbados has been working with FAO to explore the potential application of blockchain in tuna traceability as part of a tuna value chain project. As part of its BlueLab, UNDP is also planning to launch BlueDIGITAL which may also explore blockchain applications in food traceability (Nikola Simpson, UNDP, personal communication, 2021).

Sensors

A sensor is a physical device used to sense and respond to electrical or optical signals. Sensors can be deployed from a variety of different platforms, including satellites,

vessels, aircraft and autonomous vehicles. In the ocean environment, physical sensors are frequently used for underwater study and assessment. Ranging from simple handheld devices to complex remote underwater or buoy-based systems, sensors can be used to measure physical changes in the environment, including elements such as temperature, turbidity, transparency, depth, pressure and water flow.

Specific applications of information and communication technology for fisheries data collection

Small-scale fisheries are often in isolated areas, characterised by multiple actors, landing sites, fishing gear and species. This means routine collection of reliable catch and effort data is often inefficient. The data that are collected often have limited value for stock assessment. As a result, in many small-scale fisheries, including those in the Caribbean, there is a general lack of quantitative fisheries data from most small-scale fisheries (Fujita et al., 2018).

The near real-time analytical potential of digital monitoring systems allows for collecting reliable, high-resolution (i.e., at the level of individual fish) data, which both can serve statistical and stock assessment purposes but also cost-efficiently verifies data being inputted in remote locations. In the future, innovation through information and communication technologies (ICTs) will be a key enabler in developing the blue economy, particularly with regard to the collection of fisheries data, monitoring of human activities and transforming seafood value chains.

Smartphones and ICTs are increasingly recognised as a tool for participatory fisheries data collection, with the potential to increase the accuracy of small-scale fisheries data. This will facilitate communities in achieving sustainable development and an improved quality of life and in supporting the poor and excluded. Because smartphones and feature phones are quite widespread among fishers, even in many small-scale fisheries, a number of mobile apps have been developed for catch monitoring. These include apps that:

- collect catch and effort data from fishers and use it to fill out required forms (electronic logbooks);
- log catch information such as quantity, type, weight and location;
- use logbook data as inputs and transfer catch and other information to buyers and consumers;
- link to GPS devices to allow vessel tracking;
- use facial recognition software to identify fish species from photos, making it possible to more accurately and efficiently identify and sort catch, with a view to reducing by-catch.

While electronic logbooks and smartphone apps for catch reporting have the potential to increase the amount and quality of catch data, they are subject to the challenges associated with all self-reported data: those related to accuracy and reliability. Some fisheries will require catch and effort monitoring that does not depend entirely on

self-reporting. Low-cost cameras coupled with image analysis may make independent catch monitoring possible in fisheries that lack the requisite resources and analytical capacity for electronic monitoring systems.

1.11 Conclusion and recommendations

A blue economy-centred development approach, which sustainably utilises ocean resources, has the potential to mitigate some of the inherent structural challenges of small states. These can be related to small undiversified economies, limited fiscal space and high unit costs of providing public services. These challenges are partly the result of having small populations and domestic markets and limited conventional natural resources. These structural limitations and such countries' limited economic diversification mean that the impact of the COVID-19 pandemic on OECS economies has been significant.

It is, therefore, reasonable that OECS countries should be exploring the full range of opportunities to diversify and strengthen their economies, to make them less vulnerable to future economic and environmental shocks. The strategic investment of post-COVID recovery and stimulus funds into the blue economy offers opportunities to accelerate the sustainable and equitable growth of blue economy sectors, thereby securing the long-term health and resilience of the ocean.

Several promising sectors have been identified that can contribute to such a transformation, including fisheries, marine transport and marine-based tourism. Perhaps the greatest opportunities, however, lie in countries diversifying into high-value emerging sectors such as sustainable aquaculture, marine biotechnology and marine renewable energy. These can attract private investment, encourage local sourcing or produce goods higher up the value chain. The most successful countries are likely to be those that are willing to pursue a dual strategy of investing in both improving the management of existing sectors and the development of new sectors, for which limited experience or capacity may currently exist. As such, countries should continue to pursue technological innovation, such as digitalisation and fintech, to improve efficiency, reduce cross-border transfers costs and facilitate international trade.

Since adoption of the ECROP in 2013, the OECS Commission and its partners have, and continue to, put in place numerous measures aimed at creating a comprehensive enabling environment to support development of the blue economy in the OECS. More broadly, the Commission is revising its overall development framework, taking into account future environmental, social and economic development needs. While it is tempting to view the blue economy in isolation, it should instead be seen more broadly in the context of the OECS' overall sustainable development framework.

With the support of international and regional development partners, the OECS Commission continues to strengthen the regional enabling framework required to support blue growth across the region. Against this context, this chapter has sought to highlight some specific perceived gaps that not only relate to supporting a blue

economy agenda but also are critical from the perspective of the broader regional development framework being implemented by the OECS Commission, namely:

- mobilisation of private sector resources to grow the blue economy - with a specific focus on capture fisheries, aquaculture, biotechnology and marine energy;
- design and deployment of sustainable finance instruments to support conservation and restoration of key marine ecosystems; and
- innovative application of science and technology to address challenges facing the blue economy.

Based on this brief and high-level analysis, the following suggested actions are recommended for the consideration of the OECS Commission and its member countries.

1. The concept of the blue economy should not be seen as a development strategy in and of itself but rather in the context of the OECS' broader sustainable development framework. Strategies to support the development of existing and emerging blue economy sectors should be embedded not only under fisheries, shipping and environmental agencies but also in the portfolios of government agencies responsible for fiscal policy, economic planning, business development and tourism development. Support to blue economy development should take place in parallel with support to the development of SMEs, ICT and technology innovation, and trade reforms.
2. Addressing the institutional capacity gap requires strong public leadership, backed up by coherent top to bottom planning and management regime. OECS countries, the OECS Commission and development partners supporting this process must work collectively to devise new ways of working that lever greater capacity from current systems to make change happen through, for example, increased regional co-operation, sharing of costs and public–private partnerships. The development of institutional and human capacity can be practically supported by:
    - sharing and creating joint capacity;
    - increasing co-operation and co-ordination on ocean issues of common concern; and
    - conducting an OECS cross-sectoral skills gap analysis for the blue economy, which can be followed by a strategy to address the revealed skills gaps.
3. As part of a broader programme to develop regional capacity, it is recommended that OECS countries participate more widely in the various action groups under the Commonwealth Blue Charter initiative, either individually or collectively through the OECS Commission.
4. For OECS countries to fully support the transition to a sustainable blue economy, it is necessary to have in place sustainable financing mechanisms that will provide long-term and reliable funding to support blue economy activities, including:
    - conservation, restoration and sustainable management initiatives for marine and coastal resources;

- investments to make existing sectors more sustainable and profitable, including fishery improvement projects, valorisation of a range of marine ecosystem service values and projects that link coastal and marine ecosystems to climate change adaptation; and
- investment to support the development of emerging sectors (such as ocean-based renewable energy and 'blue biotechnology') by reducing the upfront investment risk for companies investing in these sectors.

Taking action to address these needs would support sufficiently 'de-risking' the business environment to an extent that entrepreneurs and investors perceive more certainty and have the confidence that there are solid opportunities to achieve the requisite scale and competitiveness that will make new innovative blue economy business models financially viable and sustainable.

5. While opportunities to leverage domestic resources by blending different types of finance with private equity are promising, there is currently a critical lack of investable projects that can attract such finance. Key to developing these sectors in the OECS is recognition of the important role of MSMEs, since these can bring innovative niche products to market and play an important role in value chains as they touch many cross-cutting areas in society.Building on the work undertaken for the OECS Blue Economy Investors' Roundtable and Partnership Forum to develop the Blue Investment Portfolio, the OECS Commission and individual governments need to work with the business sector to identify and develop investment opportunities. This collaboration would focus on resolving the major challenges facing MSMEs in the blue economy – namely, marketing, product development, operational management and finance.

6. In parallel, OECS governments should examine the mechanisms available to encourage start-up MSMEs (such as tax incentives, training or seed infrastructure investment) and to assist with capacity and technology development and to define the pathway to an effective blue economy investment promotion strategy. In addition to the UBEEC project, the OECS Commission should engage more closely with UNDP's programme to support MSME's economic transformation.

   Leveraging the existing initiatives being implemented by UNDP and the World Bank, the OECS Commission and individual governments must increasingly work with the business sector to identify and develop investment opportunities and to support the development of a robust pipeline of investment opportunities. A key focus should be on how to support pioneer investors through fiscal incentives and de-risking. In this regard, it is critical that the OECS Commission maintain and build upon the momentum of the OECS Blue Economy Roundtable initiative.

7. Moving forward, government leaders, civil society organisations, funders and other blue economy stakeholders will benefit from the clear definition of regionally grounded opportunity areas to narrow the field of potential blue economy initiatives to those that contribute to larger systems change and are most likely to succeed given present conditions.

8. In light of the ongoing work being undertaken by the OECS through CROP and the planned UBEEC project, consideration should be given to establishing one or more OECS-wide 'blue economy clusters' that could focus on both core and emerging blue economy sectors. The initial focus for such clusters should be to:
   - build a shared competitive advantage for OECS members by developing and commercialising technologies, and positioning the entity as a regional ecosystem for technology and capability development;
   - position firms, in particular SMEs, to scale and integrate into regional and global value chains, transition to high-value activities and become regional market leaders;
   - foster a critical mass of growth-oriented firms and strengthen connections and collaborations between private, public and academic organisations;
   - transform the OECS into a Caribbean hub for ocean innovation and collaboration.
9. To support establishment of such clusters, options should be explored to establish partnership arrangements between local and foreign companies and training/research institutes that would utilise expatriate expertise at the outset but rapidly develop local capacity to sustain the future of the sector. Access to technology can also be improved in the short term by establishing demand-led and responsive relationships/structures (e.g., technology extension services delivery structures) that facilitate faster adoption of already available technology (which is more often the challenge, as opposed to research to generate virgin technology).
10. In addition to a focus on the development of individual sectors, the OECS Commission and member countries should focus on developing strategies that strengthen the linkages both within and between different sectors. As an initial step, it is suggested to put in place a small number of pilot initiatives within key economic sectors to test the approach to make it possible to adapt it as necessary to local conditions.

Annex A: Complementary regional initiatives relevant to the development of the blue economy in the OECS region

Agency	Initiative	Description
UNDP	Accelerator Lab for Barbados and the Eastern Caribbean	The Accelerator Lab's objective is to promote out-of-the-box thinking and experimentation to support SIDS in the sustainable development of its ocean-based economic sectors in areas such as fisheries, biotechnology and waste management.
	Blue Economists Programme	The University of the West Indies and UNDP are collaborating with the Ministry of Maritime Affairs and the Blue Economy of Barbados to conduct a blue economy scoping study. This preliminary assessment will identify current blue sectors and potential opportunities for future sustainable development.
	Blue Invest	Blue Invest is a technical assistance and investment facility.
	Partnership on Action on Green Economy (PAGE)	PAGE supports nations and regions in reframing economic policies and practices around sustainability to foster economic growth, create income and jobs, reduce poverty and inequality, and strengthen the ecological foundations of their economies. In the Eastern Caribbean, PAGE activities contribute towards the achievement of SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), SDG 14 (Life Below Water) and SDG 17 (Partnerships).
	Bilateral technical assistance	Support is given to the governments of Dominica, Montserrat and Virgin Islands with scoping opportunities for development of the blue economy at a national level, including development of national strategic road map documents. Further assistance is planned to support the governments of Grenada and Saint Lucia.

(*Continued*)

Agency	Initiative	Description
FAO	Climate Change Adaptation of the Eastern Caribbean Fisheries Sector Project (CC4FISH)	The CC4FISH project objective is to increase resilience and reduce vulnerability to climate change impacts in the Eastern Caribbean fisheries sector, through introduction of adaptation measures in fisheries management and capacity-building of fisherfolk and aquaculturists. The components of the project are: 1. increased awareness and understanding of climate change impacts and vulnerability for effective climate change adaptation in the fisheries and aquaculture sector; 2. improved resilience of fisherfolk and coastal communities and aquaculturists 3. climate change adaptation mainstreamed in multilevel fisheries governance; 4. project management, monitoring and evaluation.
	Developing Organisational Capacity for Ecosystem Stewardship and Livelihoods in Caribbean Small-Scale Fisheries (StewardFish)	StewardFish supports implementation of the CLME+ Strategic Action Programme within the small-scale fisheries of the members of the CRFM.
	Fish Silage – Production and Use (Barbados)	The primary object is to make use of discarded fish offal and reduce the large share of fish thrown back into the near shore, which pollutes waters and creates an environmental hazard. The project will explore the conversion of the parts of the fish that are typically discarded into safe and nutritious products for the consumption of livestock. The unused fish parts can be converted into liquid fish silage with the help of enzymes in the fish itself, as they break it down into smaller pieces, and an added acid, which helps speed up the process while preventing bacterial spoilage. The pilot project has three phases. 1. a feasibility study funded by FAO, which will be conducted by Blue Green Initiative Inc.; 2. training and capacity-building with technical assistance from Argentina; 3. implementation of the knowledge and skills acquired.
	Caribbean Billfish Project	This aims to reduce mortality among billfish and increase billfish stocks by developing conservation actions that protect billfish species from unsustainable harvests, while maximising their economic value using alternative methods.

UNCTAD	Seizing the trade and business potential of Blue BioTrade in selected OECS countries (Blue BioTrade)	The aim is to conduct stakeholder-owned value chain assessments of queen conch products in the three beneficiary countries – Grenada, Saint Lucia and St Vincent and the Grenadines – and develop a Blue BioTrade regional implementation plan of action.
UNEP – Caribbean Environment Programme	Integrating Water, Land and Ecosystem Management in Caribbean Small Island Developing States (GEF IWEco)	GEF IWEco is a multi-focal, regional project that addresses the challenges faced by 10 Caribbean SIDS as they seek to preserve fragile marine and terrestrial ecosystems and ensure the sustainability of livelihoods.
IADB	Blue Tech Challenge 'Totally Traceable Tuna: Technology & Blockchain Enhancement of the Barbados Tuna Supply Chain for Export'	The Blue Tech Challenge seeks to support business models that apply new technologies to deliver products and/or solutions that foster the long-term sustainability of the ocean economy in the 14 target countries including Barbados. In Barbados, TEN Habitat Inc. has already been granted funding to evaluate methods to improve traceability of the tuna supply chain and enhance product quality with advanced testing. It will employ a combination of technologies, which include portable histamine testing, electronic radio frequency tags, QR code tags and scanning devices to develop better handling methods and collect information about the journey of a tuna at various points along the supply chain (Totally Traceable Tuna).
	Sustainable Islands Platform	The platform aims to build an online community of innovators and leaders who are committed to pursuing sustainable ocean development. This will bring new pathways to light and mobilise the private sector to engage with new technologies and business models to support island territories in their pursuit of sustainability and prosperity

(*Continued*)

Agency	Initiative	Description
	Bilateral technical assistance	Support is going to the governments of The Bahamas and Barbados to undertake national-level mapping of blue economy opportunities and to develop strategic implementation plans for the blue economy. This work also supports specific sector development, institutional and policy reforms and capacity-building.
Commonwealth Secretariat	Commonwealth Blue Charter	OECS countries are variously members of the following Commonwealth Blue Charter Action Groups: • the Commonwealth Clean Ocean Alliance Action Group on Marine Plastics – led by the UK and Vanuatu; • the Marine Protected Areas Action Group – led by Barbados and Seychelles; • the Sustainable Blue Economy Action Group – led by Antigua and Barbuda and Kenya; • the Ocean and Climate Change Action Group – led by Fiji.
Government of the UK and Foreign, Commonwealth & Development Office	Commonwealth Marine Economies Programme	Scientific and technical support goes to various OECS countries (Antigua and Barbuda, Dominica, Grenada, Saint Lucia, St Vincent and the Grenadines) including in marine scientific data collection and analysis, science infrastructure development, training and capacity-building, resource stock assessments and assessing risks associated with climate change

Chapter 2

Leveraging Opportunities in the Digital Economy in the OECS

Colette van der Ven and Neil Balchin

2.1 Introduction

The rise of the digital economy is rapidly changing the way we live, work and do business. The COVID-19 pandemic has accelerated these changes, generating a sharp increase in trade in information and communication technology (ICT) goods and services against an overall decline in trade volumes, and an increase in e-commerce in global retail trade from 14 per cent in 2019 to 17 per cent in 2020 (UNCTAD, 2021b).

The uptake in digitalisation is not merely a response or reaction to the pandemic; rather, it promises to be a more permanent transformation that will likely usher in long-term changes (OECD, 2020a). It is estimated that 70 per cent of the new value created in the world economy over the next decade will be based on digitally enabled platform business models.[11] More than 50 per cent of consumers are expected to continue shopping more often online compared with their pre-pandemic habits, and e-commerce platforms are likely to retain many of the gains in their market share *vis-à-vis* offline markets (UNCTAD, 2021b).

For developing and least developed countries, the growth of the digital economy and e-commerce creates tremendous opportunities, as it has the potential to have positive impacts on innovation, competitiveness, job creation and economic growth (Commonwealth Secretariat, 2021a). It can also enhance inclusivity. Through e-commerce, for instance, those who have traditionally been marginalised in the economy – including young women and rural workers – now face lower barriers to entering the global economy.

On the other hand, increased digitalisation risks further exacerbating existing digital and data-related divides. In many developing and least developed countries, consumers and businesses have been unable to seize new e-commerce opportunities owing to pervasive limitations and persistent barriers, related to the quality and affordability of broadband services, an overreliance on physical cash, a lack of digital literacy and confidence among consumers, and government inattention (UNCTAD, 2021c). As noted in 2021 by Mukhisa Kituyi, former Secretary-General of the United Nations Conference on Trade and Development (UNCTAD), there is a risk that 'the huge digital divides that already existed between and within countries will only worsen in the wake of the pandemic', resulting in even deeper inequalities.

11 https://www.weforum.org/platforms/shaping-the-future-of-digital-economy-and-new-value-creation

Against this background, this chapter explores the specific challenges and opportunities for the countries of the Organisation of Eastern Caribbean States (OECS) with respect to digital trade and e-commerce, as they seek to build resilience in the post-COVID era. Compared with other developing countries, OECS member countries face additional challenges as a result of the unique vulnerabilities resulting from their small size, remoteness and exposure to environmental and other external shocks (UN, 2012; Herbert, 2019; UNGA, 2019). As a result, the OECS' approach to leveraging digital economy opportunities must be tailored to the specific characteristics of the region.

In analysing the opportunities and challenges in digital trade and e-commerce for the OECS region, this chapter builds on a recent study by the Commonwealth Secretariat that assesses the digital trade and e-commerce readiness of the OECS member countries and identifies key capacity building needs (Commonwealth Secretariat, 2021a). This previous research found that the absence of a coherent regional regulatory framework across the OECS, limited availability of financial instruments and high business transaction costs significantly impede the growth of digital trade in the OECS member countries. It also highlights weaknesses in data and consumer protection and cybersecurity, payment infrastructure and solutions, stakeholder engagement and participation, trade facilitation, and investment promotion.

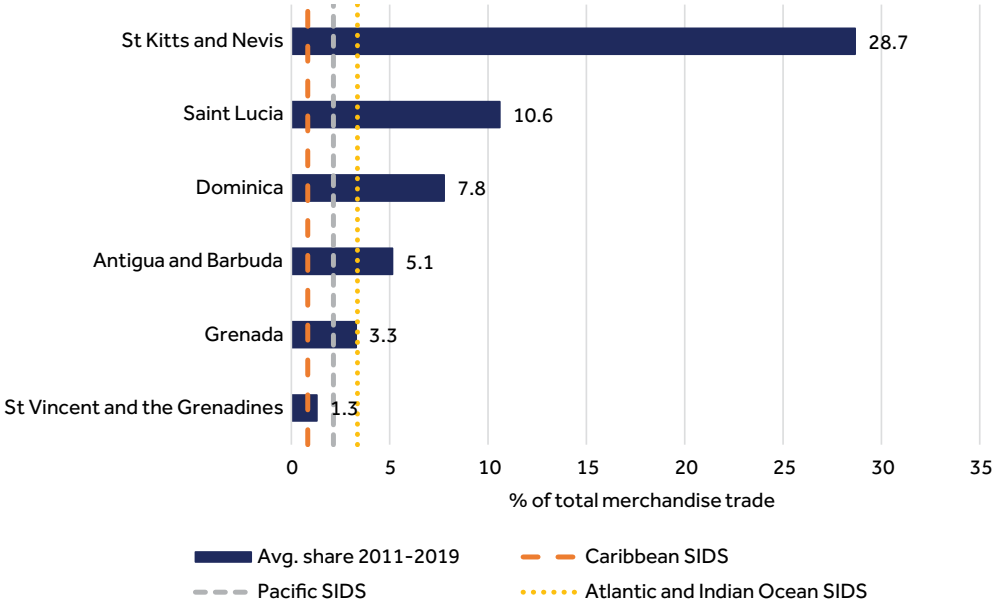
This chapter focuses on how the OECS can leverage trade agreements to address these weaknesses in member countries' digital enabling environments. It does so by analysing ongoing regional trade initiatives and agreements, and their relevance to the OECS's digital trade agenda, and by focusing on the ongoing negotiations at the World Trade Organization (WTO) on e-commerce, also known as the Joint Statement Initiative (JSI) on e-commerce. Finally, the chapter explores the role of capacity-building and Aid for Trade, and how these can be strategically leveraged.

2.2 COVID-19 and digital trade in the OECS

Digital trade and digital technologies can play an important role in helping the OECS countries rebuild their economies in the post-COVID era. Certain categories of digital goods and services already accounted for a significant proportion of OECS countries' trade prior to the emergence of the pandemic. For instance, exports of ICT goods contributed nearly 29 per cent of total merchandise exports, on average, over 2011-2019 in St Kitts and Nevis and more than 10 per cent in Saint Lucia. In these two countries, as well as Antigua and Barbuda and Dominica, ICT goods exports accounted for larger relative shares of total merchandise exports than in Caribbean small island developing states (SIDS) overall as well as in Atlantic, Indian Ocean and Pacific SIDS (Figure 2.1).

Even so, the OECS member countries generally remained net importers of ICT goods in the decade preceding the pandemic, and the combined value of their ICT goods exports declined steadily after 2013 (Figure 2.2). Saint Lucia and St Kitts and Nevis have been the largest exporters of these goods by a considerable margin over the past decade.

Figure 2.1 Share of ICT goods in total merchandise exports by OECS countries and comparators, 2011–2019

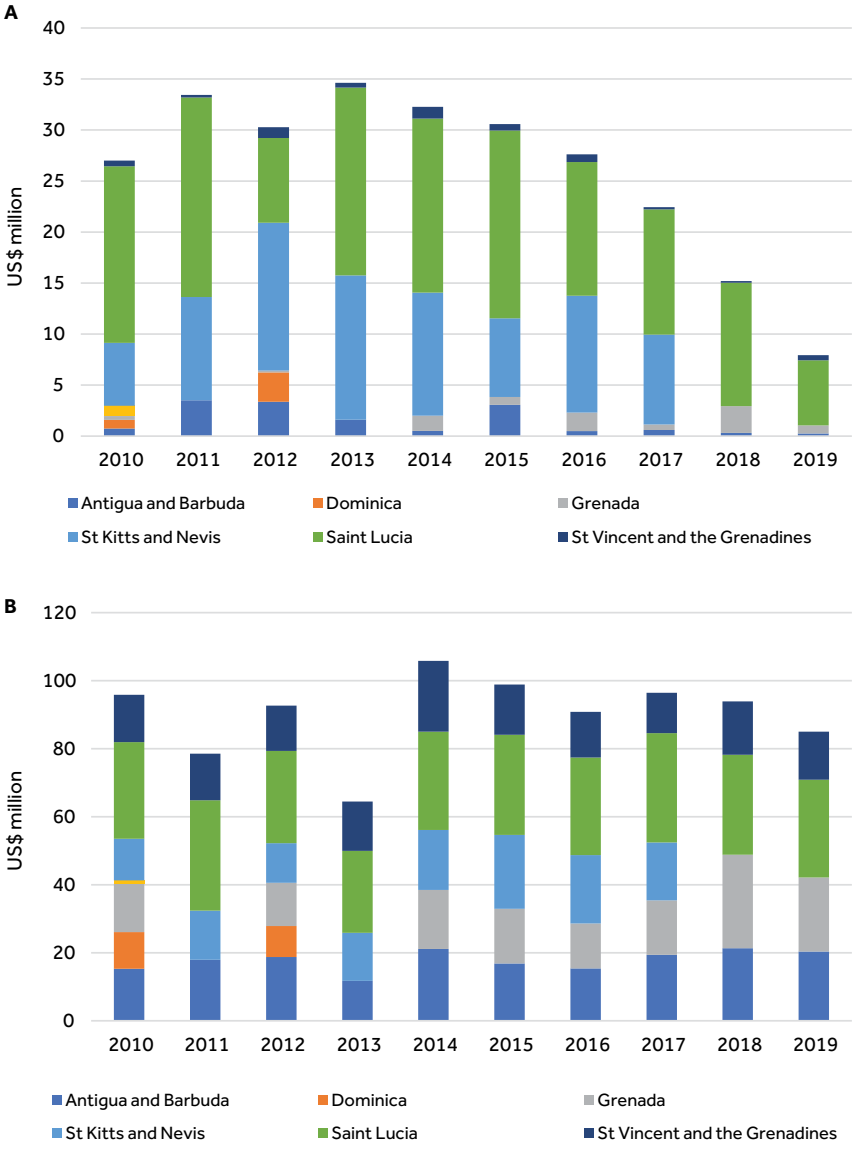


Note: Comparator countries are Caribbean SIDS (Antigua and Barbuda, The Bahamas, Barbados, Dominica, Grenada, Jamaica, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Trinidad and Tobago); Pacific SIDS (Fiji, Kiribati, Federated States of Micronesia, Palau, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, Vanuatu); Atlantic and Indian Ocean SIDS (Cabo Verde, Comoros, Maldives, Mauritius, Sao Tome and Principe, Seychelles).
Source: Commonwealth Secretariat (calculated using UNCTADStat data).

The OECS member countries have collectively been net exporters of telecommunications, computer and information services over the past decade. Even though the absolute values of both exports and imports of these services by OECS countries declined between 2019 and 2020 with the emergence of COVID-19, before rising again in 2021 (Figure 2.3 panels A and B), their shares in total services trade increased in all six Commonwealth OECS member countries in 2020 and remained above pre-pandemic levels in 2021 (Figure 2.4 panels A and B). This reflects the increasing importance of these digital services in the economies of OECS countries as their markets for tourism and travel services were decimated by the COVID-19 pandemic.

Aside from ICT services themselves, the pace of digitalisation and advances in digital technologies have increased the scope to deliver a range of other services via digital means. Most Commonwealth OECS member countries registered growth in exports of digitally deliverable services (DDS) over the decade preceding the COVID-19 pandemic (Figures 2.5 and 2.6), with year-on-year growth highest, on average, in Dominica (9.8 per cent), Antiqua and Barbuda (9.1 per cent) and St Kitts and Nevis (1.9 per cent) between 2010 and 2019. In 2019, exports of DDS totalled almost US$100 million in Antigua and Barbuda, while they ranged from $26-27 million in St

Figure 2.2 Exports (A) and imports (B) of ICT goods by OECS countries, 2010–2019

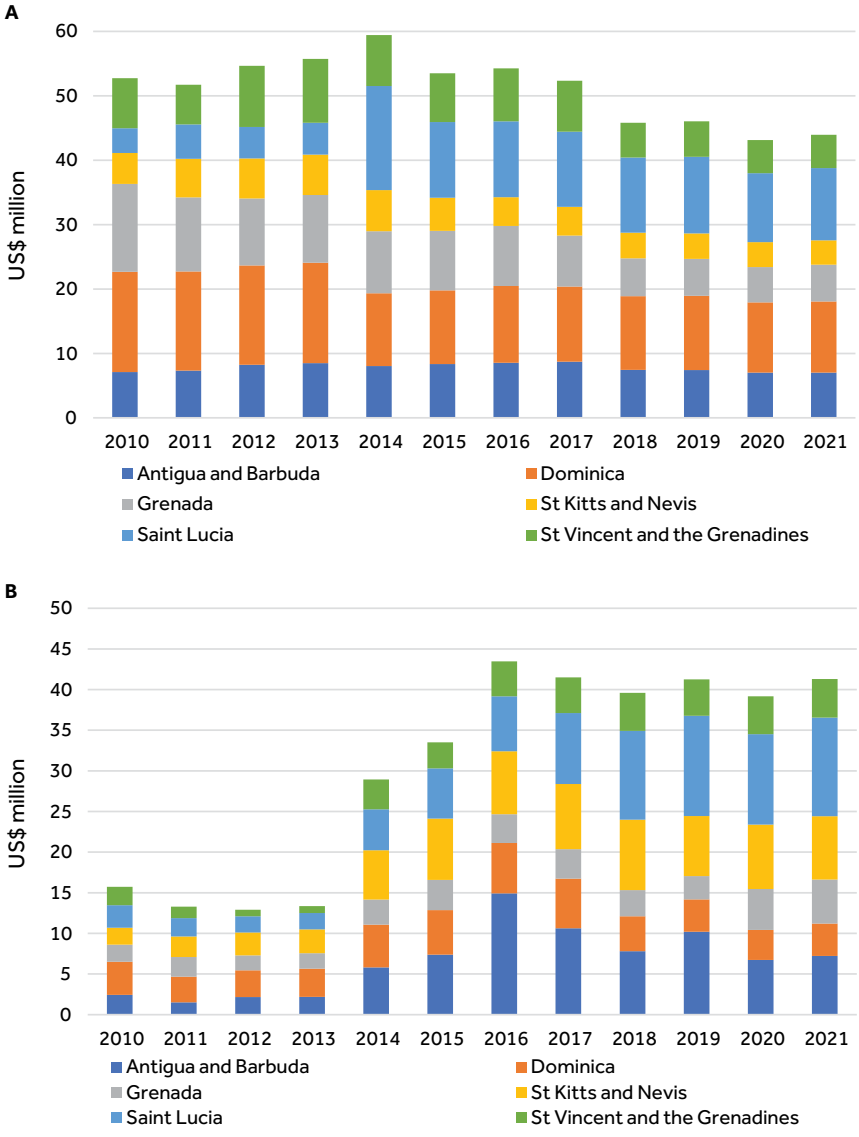


Source: UNCTADStat.

Kitts and Nevis and St Vincent and the Grenadines and $32 million in Grenada and Saint Lucia, to more than $51 million in Dominica.

In 2020, as the pandemic took hold, Grenada and St Kitts and Nevis registered massive growth in DDS exports, which climbed to $202 million and $141 million, respectively, before steep declines in 2021. Even so, these two countries, along with Antigua and Barbuda, Dominica and St Vincent and the Grenadines all recorded elevated DDS exports in 2021 compared to pre-pandemic levels.

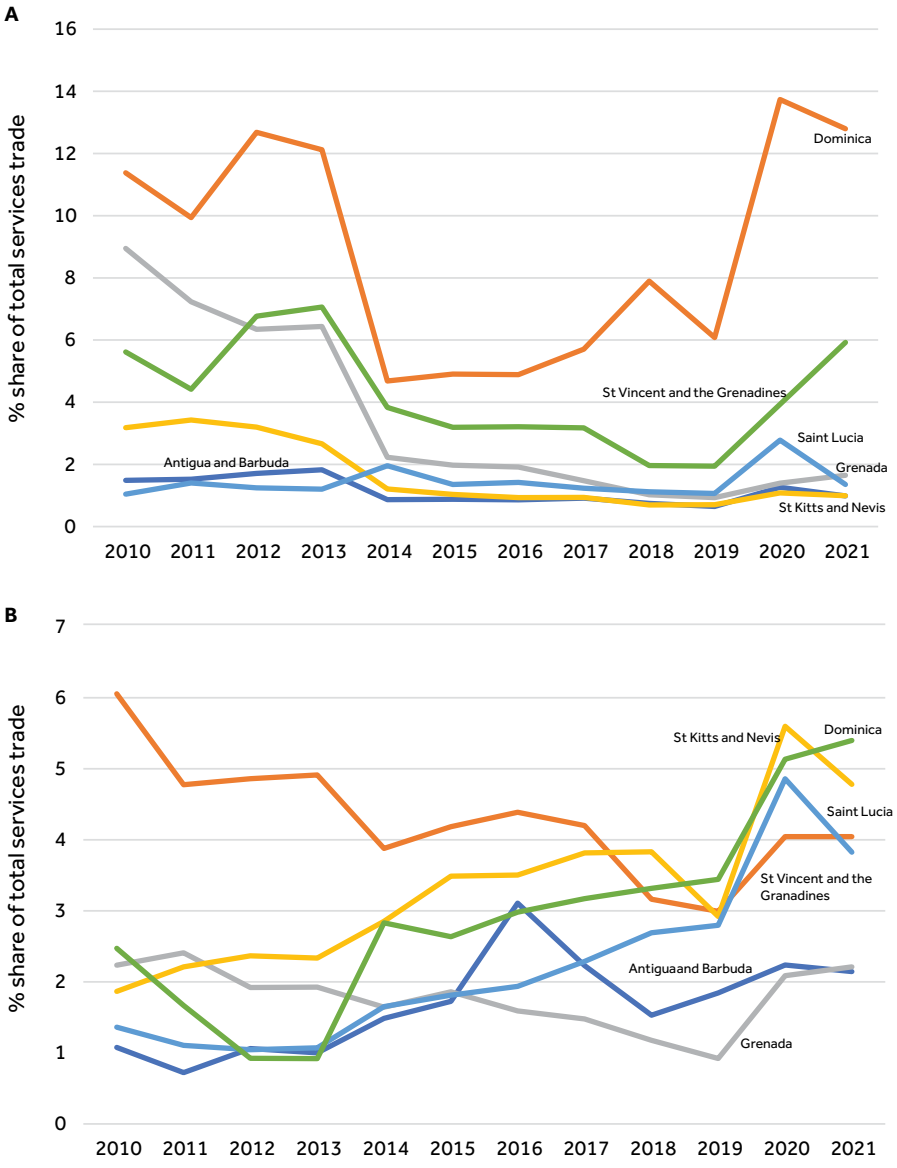
Figure 2.3 Exports (A) and imports (B) of telecommunications, computer and information services by OECS countries, 2010–2021



Source: UNCTADStat.

The increased reliance on digital technologies because of COVID-19, alongside severe constraints on tourism and travel as well as other services requiring in-person interactions, has widened the scope to deliver services digitally and increased the share of DDS in overall services trade. This was especially evident in the first year of the pandemic when restrictions on contact-intensive services were most severe. Across the world, DDS exports accounted for more than 64 per cent of all services trade in 2020 and nearly 63 per cent in 2021, up from an average of 50 per cent between 2010 and 2019. The shares of DDS exports in total services trade also

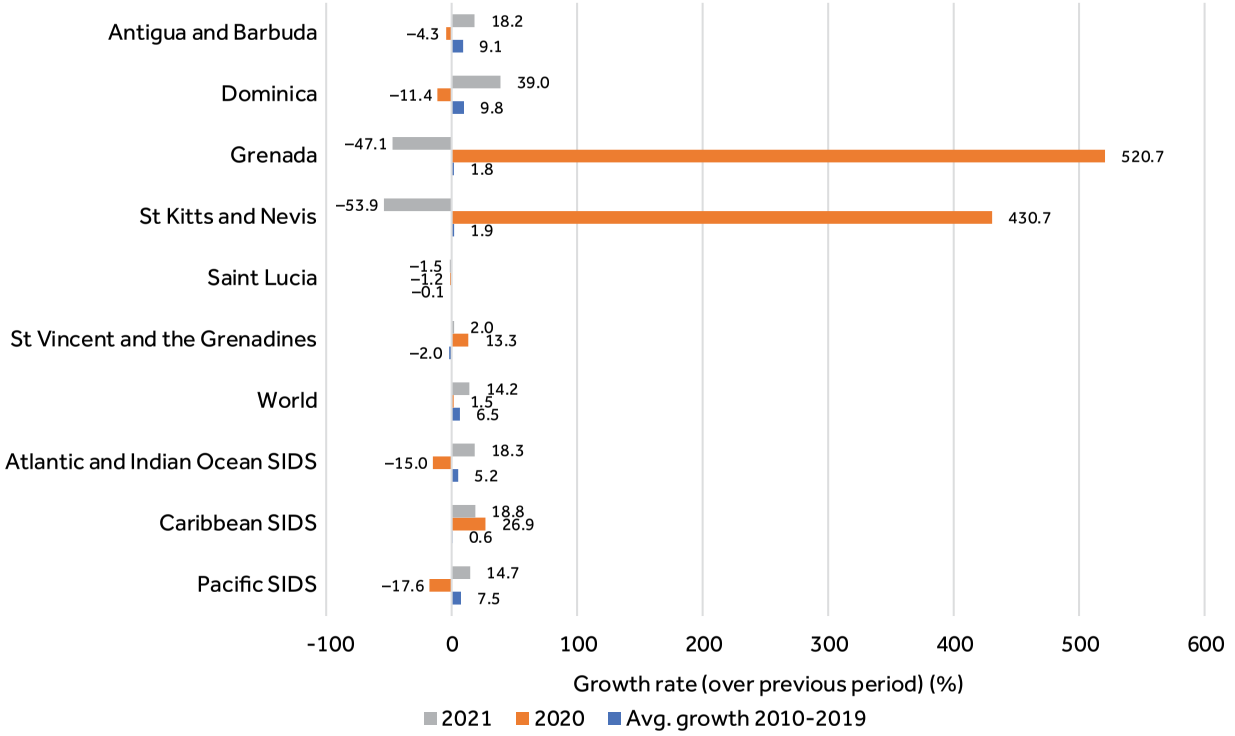
Figure 2.4 Shares of exports (A) and imports (B) of telecommunications, computer and information services in the total services trade of OECS countries, 2010-2021



Source: UNCTADStat.

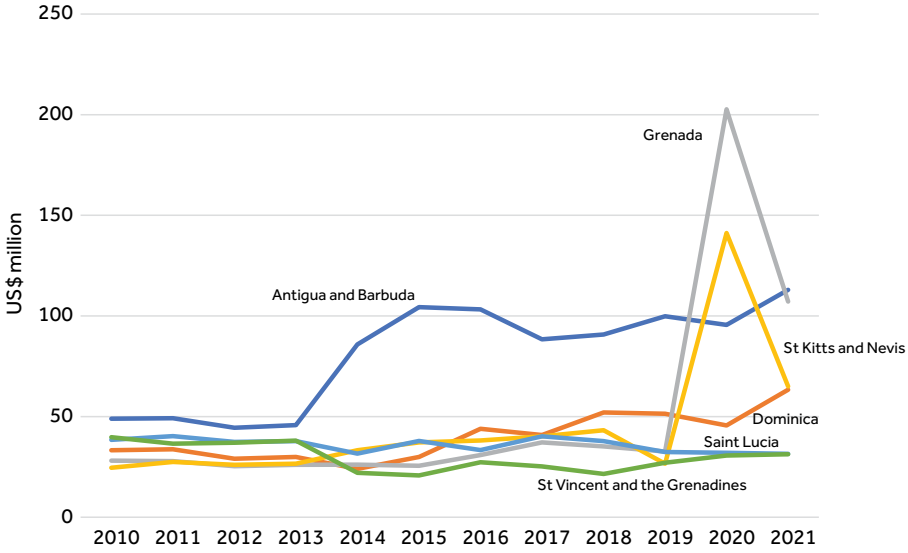
increased in all six Commonwealth OECS member countries relative to the average for the preceding decade and generally remained elevated in 2021, albeit mostly with lower relative shares than in the first year of the pandemic (Figure 2.7). In Dominica, they comprised 58 per cent of total services exports in 2020 and 73 per cent in 2021, while they accounted for more than half of all services exported by Grenada in 2020 and more than one-third by St Vincent and the Grenadines in 2021.

Figure 2.5 Growth in exports of digitally deliverable services by OECS countries and comparators, average 2010–2019, 2020 and 2021



Source: UNCTADStat.

Figure 2.6 Exports of digitally deliverable services by OECS countries, 2010–2021



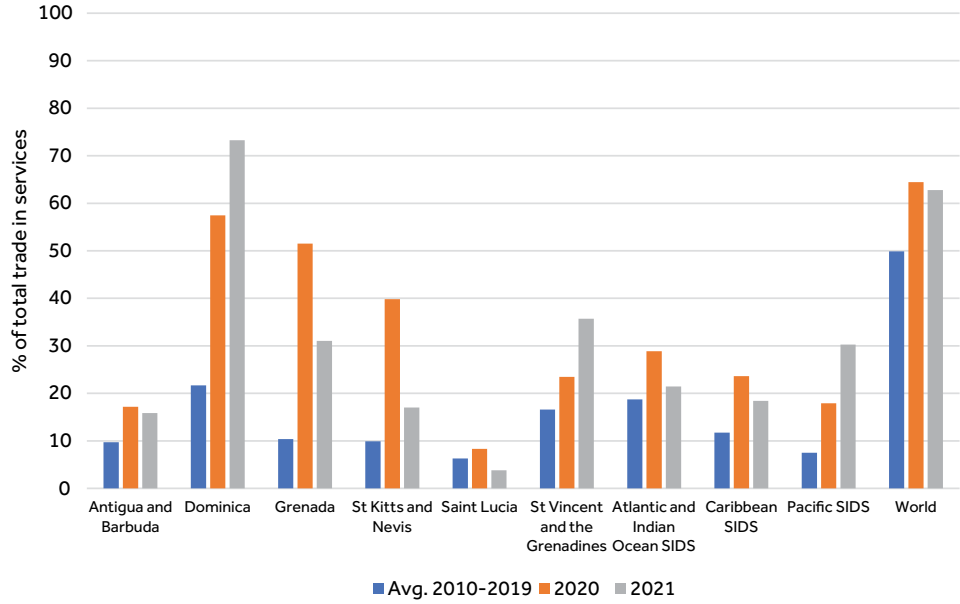
Source: UNCTADStat.

Despite the growth and increasing importance of DDS exports by Commonwealth OECS members, these countries continue to face a range of challenges to fully harnessing the benefits of digitalisation and digital trade. These reflect, at least in part, a lack of digital readiness and deficiencies in digital infrastructure that constrain successful digital transformation (as discussed in Section 2.3).

If these challenges can be addressed, the OECS' specific characteristics and economic make-up present opportunities in trade in e-commerce and digital trade in both goods and services. Digital trade and e-commerce can also help support trade and economic diversification, which remains key to reducing volatilities and vulnerabilities on account of SIDS' small size and remoteness. This is especially true at a time when pandemic-related restrictions on movement and travel have had a negative impact on tourism in the SIDS.[12] Digital technologies also have enormous potential for improving the efficiency and effectiveness of disaster risk management in Caribbean SIDS (OECD, 2020b). The recent pandemic-led accelerated digitalisation has shown that such technology can facilitate the recovery of government operations and socio-economic sectors and play a critical role in post-disaster recovery efforts. Digital technology can also be deployed to develop climate- and disaster-resilient transport in SIDS (GFDRR, 2017). In other words, digitalisation appears to be inextricably woven into the economic futures of Caribbean SIDS.

12 With the onset of pandemic-related travel and movement restrictions, SIDS suffered an estimated 70 per cent drop in travel receipts in 2020. The United Nations World Tourism Organization estimates that it could take up to four years for international tourism, an essential source of jobs and livelihoods, to recover to levels observed in 2019 (UNCTAD, 2021c; UNIDO, 2021).

Figure 2.7 DDS exports as a share of total trade in services, 2010-2019 average vs. 2020 and 2021



Source: Commonwealth Secretariat (calculated using UNCTADStat data).

In sum, the confluence of several factors, including devastating economic consequences brought upon the OECS as a result of COVID-19, the region's dependence on services and the dominance of MSMEs, all point to the importance of further developing the region's potential in the digital economy, including by focusing on digital trade and e-commerce. Doing so could accelerate the OECS member countries' post-COVID reconstruction process, thereby rendering the region more resilient to future shocks.

2.3 Key challenges to digital trade in the OECS

Several recent studies have examined the digital readiness of OECS member countries. For example, in March 2021, the Eastern Caribbean Central Bank (ECCB) developed, as part of the Fifth Growth and Resilience Dialogue (Ram, 2021), an index for measuring the digital readiness of economies in the OECS. As set out in Table 2.1, the overall Digital Readiness Index (DRI) scores for the Eastern Caribbean Currency Union (ECCU) – the currency union for the OECS countries – ranged between 4.4/10 for Saint Lucia and 6.0/10 for St Kitts and Nevis. The overall average readiness score was 5.3. No country obtained a perfect score on any of the three pillars.

According to the authors, the scores indicate that the ECCU region is in the 'middle stage of digital readiness'. As set out in Table 2.2, the DRI indicates the lowest level of development for the pillar of facilitation, with an average score of 3.0, with the most developed being digital infrastructure, with an average of 6.4. The study also revealed that technology and infrastructure alone are insufficient for a successful

Table 2.1 The ECCU Digital Readiness Index

	DRI score		International Telecommunication Union ICT Development Index Readiness Score	
Country	**Score**	**Rank (ECCU)**	**Score**	**Rank (global)**
St Kitts and Nevis	6.0	1	7.2	37
Antigua and Barbuda	5.8	2	5.7	76
St Vincent and the Grenadines	5.5	3	5.5	82
Grenada	5.3	4	5.8	73
Dominica	4.6	5	5.7	77
Saint Lucia	4.4	6	4.6	104

Source: Ram (2021).

Table 2.2 The ECCU Digital Readiness Index by pillars

	Pillar			
Country	**Digital infrastructure**	**Digital platforms**	**Facilitation**	**Overall score**
St Kitts and Nevis	8.1	6.5	3.3	**6.0**
Antigua and Barbuda	6.8	7.7	2.9	**5.8**
St Vincent and the Grenadines	6.2	7.3	3.0	**5.5**
Grenada	6.1	7.0	2.8	**5.3**
Dominica	6.1	4.7	2.9	**4.6**
Saint Lucia	5.4	4.6	3.2	**4.4**
Regional average	**6.4**	**6.3**	**3.0**	**5.3**

Source: Ram (2021).

digital transformation. While access is generally high in the OECS region, other critical elements are equally important and somewhat lagging, including facilitation and affordability, which are necessary to create a business-friendly environment with support for start-ups and investment by the private sector as well as an enabling environment with adequate legislation and regulations.

The World Bank has also undertaken surveys and assessments to gauge the digital readiness of the Caribbean region. The 2020 project appraisal document for the World Bank's Caribbean Digital Transformation Project[13] echoes some of the findings of the ECCU DRI (Table 2.3). It highlights the strides made by some Eastern Caribbean countries in developing their digital foundations, most notably in upgrading their digital infrastructure. However, more remains to be done, as they continue to lag significantly across most of the digital economy foundations, as well as in comparison with peers at similar levels of socio-economic development.

13 The project covers Dominica, Grenada, Saint Lucia and St Vincent and the Grenadines.

Table 2.3 World Bank's digital economy readiness indicators for Caribbean Digital Transformation Project countries

Country	Digital infrastructure		Digital platforms				
	Regulatory environment	Broadband penetration	Cybersecurity index	E-government index	Digital financial services	Digital skills	Digital entrepreneurship
Dominica	Low	Low	Low	Low	Low	Low	Low
Grenada	Low	High	Low	Medium	Low	Low	Low
St Lucia	Low	Medium	Low	Medium	Low	Low	Low
St Vincent and the Grenadines	Low	High	Low	Low	Low	Low	Low

Notes: Low = low level of development; Medium = intermediate level of development; High = high level of development.
Source: World Bank (2020).

High cost and lack of value for money remain challenges for broadband services in the region, and this has a disproportionate impact on the participation of MSMEs in the digital economy. The World Bank also sees an urgent need to modernise the legal, regulatory and institutional frameworks for the telecommunications sector to adequately address market failures, promote consumer interests and digital inclusion, and keep pace with rapid technology evolution. Lack of capacity and regulations are major impediments for the countries' national telecom regulatory commissions and constrain the ability of the Eastern Caribbean Telecommunications Authority to use regulatory tools to promote access to broadband connections.

The report also highlights that use and acceptance of digital payments remain very low across the region, preventing governments, individuals and businesses from transacting online and limiting financial inclusion. Another area requiring work is cybersecurity: the region lacks a comprehensive cybersecurity or data protection framework and has very limited national-level infrastructure. Importantly, from the perspective of MSMEs, the World Bank finds that businesses across the region have been slow to adapt to the digital era, blunting their productivity growth, competitiveness and ability to continue operations online during COVID-19, as well as suppressing demand for digital talent, goods and services in the market. A lack of awareness, underutilisation of digital payments and platforms among businesses, and the absence of a large base of digitally active consumers are seen as reasons for this slowdown.

Finally, an e-readiness survey of 124 respondents across six OECS states published by the Commonwealth Secretariat in October 2021 provides the latest and most comprehensive assessment of the perceptions of OECS e-commerce stakeholders about e-readiness in the region. The survey is based on an A-Z Gap Index (AZGI) for six pillars of e-commerce readiness. Broadly, the results indicate that the biggest hindrances in the region are in the areas of logistics and delivery, financial and

Table 2.4 Overview of score of OECS countries on six e-commerce pillars

Regional summary by pillar	Index (%)
Pillar 1 – National ICT infrastructure and accessibility	49
Pillar 6 - E-commerce policy and regulation	75
Pillar 3 - Citizens' readiness for e-commerce	78
Pillar 4 - Business readiness for e-commerce	79
Pillar 5 - Financial and banking ecosystem to support e-commerce	81
Pillar 2 - Logistics and delivery	86
Regional Index	74

Source: Commonwealth Secretariat (2021a).

banking ecosystem support, and business and citizens' readiness. Relative to other pillars, infrastructure and accessibility appears to be the least problematic (Table 2.4).

At the country level, the overall AZGI ranged from 69 per cent (for St Kitts and Nevis) to 75 per cent (for St Vincent and the Grenadines). With respect to national ICT infrastructure and accessibility (Pillar 1), St Kitts and Nevis, with a score of 34 per cent, was the best performing country, and the situation in St Vincent and the Grenadines, with a country AZGI score of 53 per cent, presented the greatest challenges (Table 2.5). For logistics and delivery (Pillar 2), the range across the six countries was 81 per cent (St Kitts and Nevis) to 89 per cent (Dominica and St Vincent and the Grenadines), thus indicating severe gaps across the region. Saint Lucia, which presented a national score of 88 per cent, was the only country above the regional average (78 per cent) for Pillar 3 (citizens' readiness for e-commerce). The country indices of all the other countries ranged from 73 per cent to 77 per cent, all below the regional average, indicating the severity of Saint Lucia's weaknesses with respect to Pillar 3. In terms of business readiness for e-commerce (Pillar 4), the AZGI ranged from 74 per cent for St Kitts and Nevis to 85 per cent for St Vincent and the Grenadines.

For Pillar 5 (financial and banking ecosystem to promote e-commerce), three countries (Antigua, Dominica, and St Kitts and Nevis) had higher scores than the (already high) regional average (81 per cent), thus indicating that they faced considerable challenges compared with the region as a whole. Three countries were at a better level than, or the same level as, the regional index (Grenada, Saint Lucia, and St Vincent and the Grenadines). Four countries experienced gaps within Pillar 6 (e-commerce policy and

Table 2.5 Country-level gap index scores for OECS member countries (%)

	Antigua and Barbuda	Dominica	Grenada	St Kitts and Nevis	Saint Lucia	St Vincent and the Grenadines
Pillar 1	44	45	49	34	47	53
Pillar 2	88	89	84	81	86	89
Pillar 3	76	73	77	74	88	74
Pillar 4	77	80	79	74	79	85
Pillar 5	85	85	81	92	72	78
Pillar 6	80	73	77	69	79	77

Source: Commonwealth Secretariat (2021a).

Table 2.6 Ranking of 10 lowest AZGI scores for OECS member countries

Area	AZGI score (%)
Smartphone penetration	7
Mobile wireless penetration nationwide	10
Access to internet in the country	16
Broadband penetration nationwide	19
Internet connectivity/penetration	26
Internet connectivity by business	31
ADSL penetration nationwide	35
Quality and speed of internet connectivity	35
ICT infrastructure (internet access, power supply)	28
Computer penetration	39

Source: Commonwealth Secretariat (2021a).

regulation) to a greater degree of intensity than the regional average (Antigua, Saint Lucia, Grenada, and St Vincent and the Grenadines), whereas the gaps for e-commerce policy and regulation were the least severe for St Kitts and Nevis.

As set out in Table 2.6, a ranking of the individual indicators for each pillar reveals that the 10 indicators with the lowest AZGI – that is, the indicators with the best scores – all relate to ICT infrastructure and accessibility. At the opposite end, and as listed in Table 2.7, indicators with the biggest gaps include capacity-building for MSMEs and government officials, data privacy and cybersecurity, and e-payment regulations and methods.

Based on the indicators used, the survey further identified 12 strategic areas that were formed from the 60 indicators falling into the fourth quartile (75-100 per cent) of indicator rankings, thus representing the largest hindrance to e-readiness. These were further categorised into two bands, with Band A including those areas with the most severe AZGI scores of 86 per cent to 98 per cent and Band B consisting of areas with an AZGI score between 76 per cent and 85 per cent. According to the survey, the five areas that pose the greatest hindrance to e-commerce readiness in the region

Table 2.7 Ranking of top 10 AZGI scores for OECS member countries

Area	AZGI score (%)
Education on ICT and e-commerce in universities and high schools	95
Capacity-building for public servants	96
Regulations allowing for e-payments	97
System reliability	97
Availability of online payment methods	97
Online security	98
Privacy and confidentiality of transactions	98
Credit card fraud	98
Data breaches	98
Capacity-building on e-commerce for MSMEs	98

Source: Commonwealth Secretariat (2021a).

are (i) data and consumer protection and cybersecurity; (ii) payment infrastructure and solutions; (iii) stakeholder engagement and participation; (iv) trade facilitation; and (vi) investment promotion.

For the purposes of this chapter, the next section analyses how some of the key weaknesses and challenges identified with respect to OECS e-readiness can be addressed through leveraging relevant regional and international frameworks. While not all areas can be analysed, the next section zooms in on the key hindrances identified in the Commonwealth Secretariat Digital Trade and e-Readiness Assessment Report.

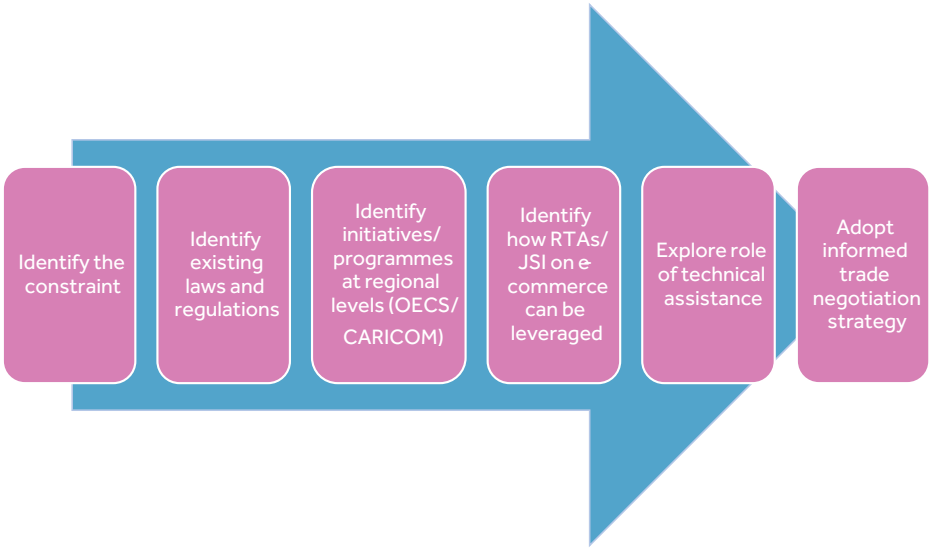
2.4 Leveraging trade agreements to develop a digital enabling environment in the OECS

Regional Trade Agreements (RTAs) can play an important role in fostering the growth of e-commerce and the digital economy. Most obviously, RTAs lower trade barriers, thereby improving market access, as well as creating opportunities to import at more advantageous rates. At the same time, most RTAs go beyond tariffs and market access, and can be leveraged to build a digital enabling environment.

Building on Section 2.3, this section analyses ways to leverage RTAs and relevant regional initiatives, the Trade Facilitation Agreement (TFA) and the ongoing JSI on e-commerce negotiations at the WTO to address the key hindrances in e-readiness, digital trade and e-commerce in the OECS. Above all, to derive maximum benefits from capacity-building initiatives and RTAs, it is important to be strategic – in both the negotiation and the implementation of RTAs.

Specifically, this section advocates for a step-by-step approach with respect to digital trade and e-commerce, following the steps set out in Figure 2.8. Given the small

Figure 2.8 Strategically leveraging trade agreements by adopting a step-by-step approach



size of the OECS member countries, it is important to develop implementation and negotiation strategies as a region, and to implement regulations harmoniously and in a co-ordinated manner. The high level of co-operation and integration in the region must be successfully leveraged to foster an enabling environment for digital trade and e-commerce for MSMEs in the OECS economies.

Acknowledging the importance of e-commerce and digital trade for the region and the work that remains to be done, the OECS member countries have undertaken several e-commerce related initiatives. Specifically, with the assistance of the Harmonization of ICT Policies, Legislation and Regulatory procedures in the Caribbean (HIPCAR) project of the International Telecommunication Union (ITU), as well as E-Government for Regional Integration Programme (EGRIP), model guidelines and legislative texts have been prepared on cybercrime and cybersecurity, data protection, electronic crimes, electronic evidence and electronic transactions, among others. The OECS member countries have prioritised implementation of data protection, electronic crimes, electronic evidence and electronic transactions (see Commonwealth Secretariat, 2021a).

However, as noted in Table 2.8, in practice different OECS member countries have adopted different levels of implementation, reflecting capacity constraints (Commonwealth Secretariat, 2021a). While all states have adopted legislation on electronic transactions, based on or influenced by the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Commerce, and all states have implemented legislation on cybercrime, progress has been slower in other areas: only Antigua and Barbuda and Saint Lucia have adopted legislation on consumer protection and only three member countries – Antigua and Barbuda, St Kitts and Nevis, and Saint Lucia – have adopted legislation addressing data protection and privacy.

In addition, several existing initiatives relevant to the digital economy have been developed by the members of the Caribbean Community (CARICOM) – of which the OECS countries are a part. This includes a roadmap for the CARICOM Single ICT Space developed in 2017, which focuses on four key characteristics: regionally harmonised ICT policy, legal and regulatory regimes; robust national and regional broadband infrastructure; common frameworks for government, ICT, service

Table 2.8 State of implementation of e-commerce-related legislation in OECS countries

OECS member country	Electronic transactions	Consumer protection	Data protection	Cybercrime
Antigua and Barbuda	x	x	x	x
Dominica	x	-	D	x
Grenada	x	-	D	x
St Kitts and Nevis	x	x	x	x
Saint Lucia	x	x	x	x
St Vincent and the Grenadines	x	-	D	x

Note: 'D' denotes countries that are in the process of considering draft legislation on this subject.
Source: Commonwealth Secretariat (2021a).

providers and consumers; and effective, secure technology and management systems. However, the CARICOM ICT regime efforts appear to have been largely stalled.

Trade agreements can also play an important role as the OECS member countries seek to improve their digital enabling environment in a post-COVID world. At the regional level, OECS member countries are part of the EU-Caribbean Forum (CARIFORUM) Economic Partnership Agreement (EPA), a trade agreement between 15 CARICOM states, the Dominican Republic and the EU, signed in 2008. Under the EU-CARIFORUM EPA, OECS member countries have made various commitments relevant to e-commerce. For example, Chapter 6 of the EPA contains provisions on e-commerce, including a provision whereby the Parties 'recogniz[e] that electronic commerce increases trade opportunities in many sectors' and 'agree that the development of electronic commerce must be fully compatible with the highest international standards of data protection, in order to ensure the confidence of electronic commerce'. Moreover, the Parties agree to maintain 'a dialogue on regulatory issues raised by e-commerce'. However, most of these provisions are weak and very general, apart from a permanent moratorium on imposing customs duty on 'deliveries by electronic means', which is considered as supply of services under the EU-CARIFORUM EPA.[14] CARIFORUM must consider deepening the EU-CARIFORUM EPA in this area. Alternatively, OECS member countries could opt to liberalise their trade regimes on electronic commerce autonomously and retain policy space and flexibility.

The EU-CARIFORUM EPA also contains provisions with respect to the digitalisation of trade facilitation procedures – one of the issues highlighted in the ECCU and Commonwealth studies analysed in Section 2.3 above as a key constraint to further developing e-commerce and digital trade in the OECS member countries. Specifically, the Parties to the EU-CARIFORUM EPA agree to base their trade and customs legislation provisions and procedures on a number of specific principles, including (i) the need to apply a single administrative document or electronic equivalent; (ii) the need for the progressive development of systems, including those based on ICT, to facilitate electronic exchange of data among traders, customs administrations and related agencies; and (iii) the importance of ensuring that all legislation, procedures and fees and charges are made publicly available, as much as possible, through electronic means. In other words, the emphasis is on digitalising border processes, thereby enhancing trade facilitation more generally.

Finally, the EU-CARIFORUM EPA contains provisions with respect to commercial presence in services, also known as foreign investment. Most OECS countries require that foreign service providers looking to invest in a particular country register under the Companies Act of that country and comply with all the relevant regulatory requirements. With respect to services sectors relevant to e-commerce, OECS member countries have made various levels of commitments. For the OECS, the most sensitive services sectors are financial services, audio-visual services, postal services, distribution services, road transport (freight), freight transport agency services, and

14 Article 119(3), Chapter 6 of the EU-CARIFORUM EPA; for a more detailed discussion on e-commerce provisions in the EU-CARIFORUM EPA, see Commonwealth Secretariat (2021a).

other supporting and auxiliary transportation services. For the most part, the OECS member countries are aligned in their commitments made in these services sectors, indicating a significant degree of co-ordination between them (Commonwealth Secretariat, 2021a). By opening certain e-commerce-related services sectors, the EU-CARIFORUM EPA can provide impetus to attract foreign direct investment from the EU in these areas. Alternatively, OECS member countries could opt to liberalise such sectors autonomously, where undertaking such commitments under collective agreements is not feasible. This would help them retain policy space and flexibility.

2.5 The WTO Work Programme and JSI negotiations on e-commerce

In addition to RTAs and regional e-commerce-related initiatives, it is important to understand relevant trade negotiations at the multilateral and global level, and to get a sense of how OECS member countries can leverage these negotiations to develop a digital enabling environment. This section looks at two ongoing initiatives that are relevant for e-commerce and the OECS member countries.

The first one is the WTO Work Programme on E-Commerce, which was established during the Ministerial Conference in 1998 (MC2) and mandates the examination of specific issues related to e-commerce by the Council for Trade in Goods, the Council for Trade in Services, the Council for Trade-Related Aspects of International Property Rights and the Council for Trade and Development (Commonwealth Secretariat, 2021a). The issues addressed in the context of the Work Programme include market access for products related to e-commerce, rules of origin, domestic regulation in the context of services, protection and enforcement of copyrights and related rights, and the implications of e-commerce for developing countries (ibid.).

The second one concerns a new e-commerce initiative that was launched at MC11 in Buenos Aires in 2017. 71 Members of the WTO signed a Joint Statement on Electronic Commerce, thereby embarking on a year-long exploratory phase to launch possible negotiations at the WTO on trade-related aspects of electronic commerce. This exploratory work has since turned into negotiations on rules on e-commerce, also known as the Joint Statement Initiative (JSI) on e-commerce, which is a plurilateral discussion.

At present, none of the OECS member countries are participating in the JSI process. By not participating, OECS member countries may be missing an opportunity, not only to help develop and shape the rules that they may be bound by later – either because the rules become multilateralised or because of pressure from other powerful countries – but also to address ongoing challenges to develop a vibrant digital economy. On the other hand, if OECS member countries adopt rules autonomously, they might eventually want to align their rules with multilateral rules of a multilateralised agreement on e-commerce.

This section explores how OECS member countries can seek to leverage the JSI negotiations on e-commerce to address key hindrances to developing a digital enabling environment, as identified in Section 2.3 above. The following discussion

covers selected issues that are of particular relevance for OECS member countries.[15] Specifically, it focuses on the implications for these countries of (i) data and consumer protection and cybersecurity; (ii) payment infrastructure and solutions; (iii) trade facilitation; and (vi) investment promotion.

2.5.1 Data privacy protection, consumer protection and cybersecurity

As noted in Section 2.3, data privacy and confidentiality, consumer protection and cybersecurity form key obstacles to developing the digital economy in OECS member countries. At present, only Antigua and Barbuda, St Kitts and Nevis, and Saint Lucia have both data privacy laws and consumer protection laws in place. Dominica, Grenada, and St Vincent and the Grenadines have yet to adopt these regulatory frameworks. All OECS member countries have cybercrime laws in place but cybersecurity laws are mostly absent. Developing these regulatory frameworks is critical to enhancing e-commerce in the OECS member countries, given that they all contribute to establishing trust by the consumer when engaging in online transactions.

The draft JSI on e-commerce currently includes provisions on the protection of data privacy, consumer protection and cybersecurity. This section highlights key elements of proposed provisions in each area and briefly analyses the implications for the OECS member countries.

Data privacy under the JSI on e-commerce

The sharing of personal information is an integral part of e-commerce. For instance, making an online purchase typically requires providing payment details and personal details such as name, address, phone number, etc. The protection of personal information concerns the protection of such information. In the context of the JSI negotiations on e-commerce, WTO Members are considering the inclusion of provisions on the protection of personal information and data privacy.

The protection of data privacy is, however, a contentious issue, with different jurisdictions championing different approaches. For instance, the EU considers personal data privacy a fundamental human right. Accordingly, it has adopted the General Data Protection Regulation (GDPR), which grants rights to individuals to control personal data and creates specific new data protection requirements. The GDPR sets various conditions for cross-border data flows, including that routine data transfers are allowed only to countries that the EU considers have an equivalent level of data protection as the EU. The Chinese government has adopted an approach that limits both the free flow of information and individual data privacy, based on national security concerns. The USA has adopted a more business-oriented approach, favouring less regulation and prioritising the free flow of data across borders. At the same time, many developing countries have not yet adopted any data privacy regulations. The draft JSI reflects the different positions of these key players, ranging from more to less stringent provisions.

15 The discussion does not cover the entire gamut of issues related to the JSI e-commerce negotiations, which would require a separate, in-depth, analysis.

Should OECS member countries decide to join the JSI on e-commerce, the obligation to adopt a data protection framework would provide an impetus for those countries that have not yet finalised their data privacy regulations to do so. This would be important to enhance consumer confidence in digital transactions. Moreover, it would prevent international providers doing business in the OECS member countries from freely using consumer data without being subject to any restrictions. This is especially important because, with the increasing relevance of data and cross-border data flows as economic resources, new dimensions of the digital divide have emerged, in connection with the 'data value chain'. As the UNCTADs 2021 *Digital Economy Report* finds, developing countries 'risk becoming mere providers of raw data to global digital platforms, while having to pay for the digital intelligence obtained from their data', and, in this manner may find themselves in subordinate positions (UNCTAD, 2021d).

Online consumer protection

Provisions to protect online consumers have been a key part of the JSI e-commerce negotiations. These draft provisions ensure consumers are entitled to clear and comprehensive information regarding the service and its providers, demand that businesses act in good faith and require access to a redress mechanism.

As noted above, only three OECS member countries have adopted consumer protection laws: Antigua and Barbuda, St Kitts and Nevis, and Saint Lucia. Dominica, Grenada, and St Vincent and the Grenadines have not yet updated their consumer protection legislation. In this regard, joining the JSI on e-commerce could provide impetus to progress on consumer protection legislation, thereby enhancing trust in digital transactions.

Cybersecurity

Cybersecurity is understood as a set of measures aimed at protecting computers, servers, mobile devices, electronic systems, networks and data from malicious attacks (e.g. phishing, malware etc.). Such attacks can have severe consequences and present financial, reputational and operational risks. Putting in place a cybersecurity regime is especially important in the region of Latin America and the Caribbean, which has one of the fastest-growing internet populations in the world.

In the context of the JSI, WTO Members are bringing two different approaches to cybersecurity provisions. Some are focusing on a risk-based approach and others on more prescriptive regulation. On the one hand, a risk-based approach requires the identification and targeting of elements of cyber risk based on the extent of the risk. This approach is flexible, adaptable and less prescriptive, but could also be *de facto* discriminatory. The prescriptive approach, on the other hand, is more predictable but less flexible. By joining the JSI on e-commerce, the OECS member countries could therefore be encouraged to adopt and/or upgrade their cybersecurity protection regulations.

While the text of consumer protection provisions is close to final, cybersecurity and data protection provisions are still under negotiation, with alternative approaches

under discussion. This means that, should the OECS member countries decide to engage in the negotiation of the JSI on e-commerce, it would give them the opportunity to participate in the shaping of the rules.[16] In doing so, they could advocate for a position best aligned with their own priorities, including by advocating for special and differential treatment (S&DT) for developing and least developed countries *vis-à-vis* adopting and implementing data privacy protection, consumer protection and cybersecurity regulations, as further elaborated below. That said, the issue of S&DT remains contentious, and the OECS member countries will require legal capacity and extensive use of diplomatic capital to formulate a meaningful negotiating position, particularly on crucial issues such as free flow of data, non-discrimination and access to source code.

2.5.2 Payment infrastructure

Lack of access to digital payment solutions represents another key constraint to developing the digital economies of OECS member countries. The importance of facilitating e-payments in creating a digital enabling environment cannot be overstated. Indeed, without giving buyers and suppliers the option to pay online, e-commerce will not be viable. More specifically, electronic payment suppliers (EPS) are often critical for enabling MSMEs to get into formal financial services, as electronic payments enable MSMEs to establish a credit history and facilitate access to loans. Moreover, they enable MSMEs to access global suppliers.

Given that EPS are at the heart of electronic transactions, and inability to make an electronic payment could seriously hinder e-commerce, facilitating the provision of these services can be expected to significantly facilitate e-commerce. At the same time, especially for developing countries, this may be difficult to achieve, because of a lack of national legal frameworks and the infrastructure necessary to underpin EPS.

One of the draft provisions that is being negotiated in the JSI on e-commerce concerns providing market access and national treatment to allow foreign EPS to establish or expand their presence in a country's territory. Currently, the WTO services schedules of OECS member countries contain no commitments[17] under the category 'all payment and money transmission services', indicating that OECS members are not under the obligation to open their market to foreign EPS. Joining the JSI could mean that the OECS member countries have to consider liberalising their markets to foreign EPS.

In this regard, by making commitments to provide rights to establish and/or expand commercial presence to foreign service suppliers, the OECS member countries could facilitate attracting foreign investment to EPS, thereby enhancing their digital payment infrastructure. However, it would be important to ensure, as a first step, that an adequate domestic regulatory framework is in place to support e-payment solutions.

16 Participation would enable OECS countries to table their positions (both offensive and defensive interests); form alliances with other countries to push for flexibilities, including S&DT, policy space and implementation challenges; and demand ways to address the digital divide - issues that might not be discussed comprehensively if OECS and other developing countries are not party to the discussion.

17 https://www.wto.org/english/tratop_e/serv_e/serv_commitments_e.htm.

2.5.3 Trade facilitation

Another key issue identified in the context of fostering a digital enabling environment in the OECS member countries concerns trade facilitation. Indeed, the studies referred to in Section 2.3 indicate that this is an area in which OECS member countries can make significant progress. Trade facilitation provisions for the OECS member countries are particularly important given the efficiency gains they can bring to MSMEs. The World Economic Forum has estimated that, in some countries, MSMEs could see an increase in cross-border sales by 60 to 80 per cent (Commonwealth Secretariat, 2021a).

Within the context of the WTO, trade facilitation is addressed in both the TFA and the JSI on e-commerce. Trade facilitation provisions in the JSI on e-commerce focus predominantly on paperless trading, *de minimis* – that is, a minimum value or amount of goods below which no import taxes or duties are collected - customs procedures, improvements to trade policies, electronic transferrable records, single windows data exchange, systems interoperability, logistics services and enhanced trade facilitation (WTO, 2019c).

Should the OECS member countries decide to join the JSI on e-commerce, they would be incentivised to accelerate improvements to their trade facilitation processes. This includes prioritising the implementation of a number of commitments made under the TFA that are particularly relevant to the digital economy, as set out under 'enhanced trade facilitation'. To understand the extent to which OECS member countries have already made progress in this area requires looking into the commitments they have made and implemented under the TFA.

To date, a total of 133 Category A measures have been implemented by the OECS member countries, with a total of 108 earmarked for future commitments. Based on the TFA notifications to the WTO, the OECS country that has implemented the most TFA commitments is St Kitts and Nevis (57), followed by St Vincent and the Grenadines (42) and Antigua and Barbuda (41). Dominica, Grenada and Saint Lucia each have implemented a total of 36 commitments. All OECS members have indicated their Category C requests for technical assistance, including in the areas of Advanced Rulings (Article 3), General Disciplines on Fees and Charges imposed on or in connection with the importation and exportation (Article 6.1); Specific Disciplines on Fees and Charges imposed on or in connection with importation and exportation (Article 6.2); and single window (Article 10.4). Implementing these provisions, in addition to Article 7.6 on Establishment and Publication of Average Release Times, is critical to trade facilitation competitiveness and to supporting the OECS region's e-commerce ambitions (Commonwealth Secretariat, 2021a).

In this regard, it would be important for OECS member countries to develop a list of priorities with respect to the implementation of trade facilitation, that focuses on (i) provisions that would have most promise for e-commerce (the ones listed under 'enhanced facilitation' in the JSI on e-commerce); (ii) provisions that are yet to be implemented and are listed under Category C; and (iii) provisions that have been prioritised under the CARICOM regional Trade Facilitation Strategy, which

includes general disciplines on fees and charges for customs processing imposed on or in connection with exportation and importation; establishment and publication of average release times; risk management; post-clearance audit; and test procedures (Commonwealth Secretariat, 2021a).

2.5.4 Investment promotion

The Commonwealth e-readiness study concluded that OECS member countries should also focus on investment promotion in areas relevant to e-commerce. The specific issues include foreign direct investment in ICT, an enabling investment climate for e-commerce and developing awareness on investment opportunities in the e-commerce ecosystem. Yet investment can also help narrow remaining gaps in areas such as trade facilitation, or logistics and telecommunications – all of which are critical to developing a vibrant e-commerce ecosystem.

Investment promotion is not a direct focus of the JSI on e-commerce discussions. However, under the JSI e-commerce framework, WTO Members are discussing enhancing market access/national treatment in services sectors that are directly related to e-commerce. Specifically, the framework contains a draft schedule with a compilation of different services sectors – and the relevant modes – that Members would be required to liberalise under the JSI on e-commerce. The sectors that have been identified are set out in Table 2.9. For all these sectors, Members are proposing full market access and national treatment commitments for modes 1-3 (mode 1 cross-border supply, mode 2 consumption abroad and mode 3 commercial presence).

As noted above, OECS member countries have made only a few commitments in these areas. This means that, should OECS member countries join the JSI on e-commerce, they would be required to liberalise a number of services sectors that currently are not open to foreign providers. On the one hand, such market openings could make a difference and facilitate attracting investment in relevant services schedules, thereby increasing capacity on issues such as logistics, transportation and e-payments – all critical to a digital enabling environment. Moreover, it could provide additional market access opportunities in goods and services of interest to the OECS, thereby enabling them to expand trade. On the other hand, increasing openness in the digital sphere could enhance competition and thereby create political challenges. The OECS member countries would thus need to carefully design and prioritise their approach to participating in the JSI on e-commerce.

2.5.5 Summary of options to leverage the JSI on e-commerce

In sum, this section has demonstrated how trade agreements can be leveraged to help the OECS advance its digital economy, including by addressing key weaknesses in the digital enabling environment in the region. There will be advantages and disadvantages to joining the JSI on e-commerce. As the digital economy is still in its infancy in many OECS member countries, they may not have the infrastructure and digital enabling environment necessary to implement the substantial obligations set out in the JSI on e-commerce. At the same time, by not participating, OECS member countries are missing the opportunity to provide inputs into the process of developing

Table 2.9 Draft schedule of services commitments set out in the JSI on e-commerce

Computer and related services: • Consultancy services related to the installation of computer hardware • Software implementation services • Data processing services • Data base services • Other	*Advertising services* *Technical testing and analysis services* *Courier Services*	*Distribution services* • Commission agent's services • Wholesale trade services • Retailling services	*Banking and other Financial Services (excluding insurance)* • All payment and money transmission services, including • credit, charge and debit cards Travellers cheques and bankers drafts	*Telecommunication services* Facilities-based: • Voice telephone services • Packet-switched data transmission services • Circuit-switched data transmission services • Telex services • Telegraph services • Facsimile services • Private leased circuit services
Telecommunications services: Resale (non-facilities based): • Voice telephone services • Packet-switched data transmission services • Circuit-switched data transmission services • Telex services • Telegraph services • Facsimile services • Private leased circuit Services	*Telecommunications services:* Electronic mail • Voice mail • On-line information and database retrieval • Electronic data interchange • Enhanced/Value-added facsimile services (including store and forward, store and retrieve) • Code and protocol conversion • On-line information and/or data processing (including transaction processing)	*Rail Transport Services* • Freight transportation *Road Transportation* • Freight transportation	*Air Transport Services* • Maintenance and repair of aircraft • Selling and marketing of air transport services • Computer reservation system (CRC) services	*Maritime Transport services* • Freight transportation • (CPC 7212, less cabotage transport services) *Services auxiliary to all modes of transport* • Cargo-handling services • Storage and warehouse • Freight transport agency services • Other

Source: Commonwealth Secretariat (2021).

international rules for e-commerce, which will affect all countries, even those that are not participating in the negotiations.

In this regard, OECS member countries could consider their participation in the discussions as a way to influence the negotiations, without prejudging their decision regarding the adoption of the final outcome. This will be specifically important with regard to capacity-building. For instance, based on understanding their capacity-building needs and areas where they would require additional implementation time, as the section below further elaborates, OECS member countries could strategically request these flexibilities for developing countries in the context of the JSI on e-commerce. In doing so, it would be important for the OECS to approach the issue collectively, as a single negotiating bloc.

2.6 Aid for Trade and capacity-building

As noted in the previous section, RTAs can require countries to make a set of commitments that could be critical to further developing an e-commerce enabling environment. However, developing and least developed countries often lack capacity to properly implement commitments, making compliance difficult.

To respond to these capacity constraints, many trade agreements include S&DT provisions, which provide more flexible implementation schemes for developing and least developed countries. For example, under the TFA, developing and least developed countries have the option to make commitments only after a transitional phase has passed (Category B commitments) or only after additional time and on receiving capacity-building support to implement the measure (Category C).

The JSI on e-commerce also contains a section on capacity-building, although this section is still relatively broad. Among other things, developed and developing Parties will provide targeted technical assistance and capacity-building, especially to least developed countries, in order to improve their digital ecosystems and allow them to implement WTO rules on electronic commerce.

It will be important for OECS member countries to explore how, in the context of digital trade and e-commerce, they can ensure that they have access to sufficient capacity-building and technical assistance programmes. In the context of considering whether to join the JSI discussion on e-commerce, the OECS member countries are encouraged to tailor requests for technical assistance to areas where the gaps between the current draft JSI provisions and their existing laws and regulations are the largest. For example, the OECS member countries could seek to influence the discussions by enabling developing and least developed countries to render certain commitments contingent upon receiving technical assistance, similar to the structure of the TFA.

Enhancing technical assistance for e-commerce appears to be especially relevant for OECS member countries. A recent Commonwealth Secretariat study found that Caribbean Commonwealth countries received the least amount of Aid for Trade resources relevant to ICT – compared with what other regions received (Lacey, 2021). For instance, in 2018, African Commonwealth states received US$31.38 million, Asian

Table 2.10 ICT-related aid for Commonwealth Caribbean and Americas countries (US$ millions)

Country	2017	2018
Antigua and Barbuda	-	-
The Bahamas	-	-
Barbados	-	-
Belize	-	0.01
Canada	-	-
Dominica	-	-
Grenada	-	1.03
Guyana	-	-
Jamaica	-	0.13
St Kitts and Nevis	-	-
Saint Lucia	0.37	0.49
St Vincent and the Grenadines	0.25	0.41
Trinidad and Tobago	-	-
TOTAL	**0.61**	**2.08**

Source: Lacey (2021).

Commonwealth countries a total of $39.74 million and Commonwealth Caribbean and Americas countries only $2.08 million in ICT-related aid (Table 2.10). Several OECS member countries, including Antigua and Barbuda, Dominica, Grenada, and St Kitts and Nevis, received no ICT-related Aid for Trade.

It would thus be interesting to explore how sufficient funds can be mobilised as OECS members seek to identify synergies between addressing weaknesses in their digital trade and e-commerce environments, and their trade agreements. It will also be important for the OECS member countries to start prioritising Aid for Trade assistance based on where the need is the highest. A good starting point would be the Strategic Matrix and Monitoring and Evaluation Framework to Assess Digital Trade and E-Commerce Readiness and Associated Capacity-Building Needs in Six Member Countries of the OECS, which highlights priority areas for the six Commonwealth OECS member countries.[18] Here, it is worth highlighting that technical assistance and capacity-building programmes should also focus on areas that are identified as hindrances to the further development of the digital economy generally – and not just on e-commerce and digital trade. In this regard, skills development programmes for MSMEs and e-governance will be important areas.

2.7 Conclusion

This chapter has set out various reflections on the importance of the digital economy in building resilience in the OECS in a post-COVID world. Specifically, it has sought to link the opportunities and challenges associated with the digital economy in the OECS with existing RTAs, and with the JSI on e-commerce that is being negotiated at

18 https://production-new-commonwealth-files.s3.eu-west-2.amazonaws.com/migrated/inline/OECS%20Framework_cropped.pdf

the WTO. While these agreements can be leveraged to advance the development of a digital enabling environment, it would be prudent for the OECS member countries to carefully study the advantages and disadvantages associated with joining an agreement like the JSI on e-commerce before they decide to do so. This requires a much more detailed analysis of the existing legal and regulatory frameworks in the OECS, their economic make-up and the political landscape of the countries. This, in turn, necessitates more detailed analytical work, with on-the-ground research.

While this chapter has focused on the intersection between trade agreements and the OECS' digital economy, it is also important to keep in mind that trade agreements alone are insufficient to develop a vibrant digital economy. Capacity-building is also necessary, both within the context of trade agreements and outside of them. Indeed, skills development programmes for businesses and initiatives to enhance e-governance or develop digital payment infrastructure require domestic measures, laws and initiatives. Moreover, turning the OECS into a vibrant digital economy requires strategic thinking that goes much beyond trade agreements. In sum, a comprehensive approach is required for the OECS to enhance its digital economy and take it to the next level.

Chapter 3

Trade, Natural Disasters and Building Resilience in the OECS[19]

Jan Yves Remy, Hannes Schloemann, Clémentine Pitard and Selisha Gilchrist

3.1 Introduction

Combatting climate change and mitigating its adverse effects, especially the growing frequency and severity of natural disasters, is a top priority for the members of the Organisation of Eastern Caribbean States (OECS). Given their geographic location, small island developing states (SIDS) are affected by a range of natural disasters, including hurricanes, floods, volcanic activities and earthquakes. These disasters disproportionately affect their economies and societies and are expected to intensify as global warming leads to a further increase in sea water temperatures. Countries of the OECS – a subset of members of the Caribbean Community (CARICOM) – are among the most susceptible to the physical effects of climate change despite having contributed the least to global warming. They are dependent on climate-sensitive sectors like tourism and agriculture; the poorest and most vulnerable reside in high-risk zones; and the frequent occurrence of natural disasters has kept the countries in a vicious cycle of high debt/low growth. With limited capacity to respond and build resilience to natural hazards, and to mitigate and adapt to climate change, OECS countries require greater support from all international regimes and development partners.

Recognising the importance of trade and trade policy for natural disaster response, six OECS World Trade Organization (WTO) Members tabled a proposal at the 11th WTO Ministerial Conference (MC11) to bring attention to the catastrophic impact of natural disasters on SIDS and small and vulnerable economies (SVEs). They called for 'full flexibility' of the multilateral trading system to support disaster recovery and reconstruction (CARICOM, 2019).

Set against this backdrop, this chapter aims to shed light on the extent to which OECS Commonwealth countries can utilise existing WTO trade rules to support their disaster response, recovery and resilience efforts and the likely challenges they may encounter in utilising these flexibilities. It also highlights the need for a focused agenda on climate change and natural disasters at the WTO. The chapter begins with a brief explanation of the phenomenon of natural disasters – their types, frequency and associated costs – and how the existential threat climate change poses is affecting their

19 A longer version of this chapter was prepared for the Commonwealth Trade Ministers.

incidence. Specific attention is given to the situation of Commonwealth vulnerable states in the OECS.

The second section explores the link between trade and natural disasters and the areas of disaster response, recovery and resilience-building, that calls for a trade response. It then examines the current WTO agenda with a focus on the possibilities that exist in theory to utilise existing flexibilities in the rules to prepare for and successfully overcome the impacts of natural disasters. The chapter concludes by exploring the scope to include natural disasters and climate change as distinct areas in the current WTO negotiating agenda, especially on remaining fisheries subsidies issues, special and differential treatment, e-commerce and agriculture.

3.2 Typology and frequency of natural disasters

The UN defines natural disasters as 'the consequences of events brought on by natural hazards which overwhelm the local response capacity of a country and seriously affect its social and economic development' (Mitra and Vivekananada, 2015). While an event may emanate from a hazard, the resulting disaster is linked to the human or local capacity to respond or lack thereof. The more fragile or vulnerable a state, the more likely that its adaptive capacity or responses will be inadequate, leading to serious and prolonged disruptions and widespread losses (ibid.). Inadequate responses include failure to manage risk, to meet needs arising from the disaster and to build back better. In the COVID-19 era, countries' local capacity has been further weakened, increasing vulnerability to seasonal natural disasters and further stymying a disaster response. It is thus widely accepted that disaster management efforts, especially in the pandemic reality, should focus on reducing individual, community and economy vulnerabilities while strengthening their resilience.

Natural disasters can emanate from a broad range of naturally occurring phenomena or hazards, and can be categorised in a variety of ways.[20] They may be differentiated based on whether they are meteorological (e.g. hurricanes, cyclones, storms, monsoons), climatological (droughts, wildfires, extreme temperatures), hydrological (floods, landslides, avalanches), geophysical (earthquakes, volcanoes) or biological (epidemics, insect infestations, other unique hazards) (Below et al., 2009). These hazards can be caused by slow-onset (occurring over many years) as well as sudden shock events (occurring in a matter of seconds, minutes, days or hours) (UNFCCC, 2012) (see Box 3.1). When combined with a country's existing endogenous vulnerabilities, lack of preparation and response can result in cataclysmic loss and disasters (Diouf et al., 2021).

20 Different studies and organisations use different classifications. For instance, in some cases, the COVID- 19 pandemic has been classified as a natural hazard (e.g. by the International Federation of Red Cross and Red Crescent Societies (IFRC) (see Seddighi, 2020).

Box 3.1: Slow- and sudden-onset natural disasters

Slow-onset events refer to the risks associated with sea level rise, increasing temperatures, land and forest degradation, loss of biodiversity and desertification, and salinisation, to name a few[21]. In the long term, these events are predicted to affect countries the most. According to some predications, for example, by 2050 sea level rise will threaten over 300 million people, particularly low-lying countries, most of which are SIDS (Kulp and Strauss, 2019). Sudden-onset events include hydro-meteorological hazards or extreme weather events such as tropical cyclones, hurricanes, coastal floods and mudflows. They also include geophysical hazards such as earthquakes, tsunamis and volcanic eruptions (UNHCR, 2017).

While the link between climate change and natural disasters has not been fully proven or even understood, there is an agreement among scientists that climate change has and is expected to increase the frequency and intensity of both slow- and sudden-onset natural hazards (UNHCR, 2017). The increase in temperatures makes droughts more likely, and generates more water vapour. More heat in the atmosphere and a warmer sea surface temperature makes storms more powerful, increasing the chance of a tropical storm becoming a hurricane. Warmth also favours moisture, and thus heavier rains during a storm. Rising sea levels means that more communities will be exposed to natural hazards, as they increase the risk of flooding (Kaplan, 2020).[22] The increased appearance of sargassum seaweed on Caribbean coastlines (Langin, 2018), the unprecedented locust crises plaguing Ethiopia and East Africa (Stone, 2020) and the increase in the spread of vector-borne diseases such as dengue (Cromar and Cromar, 2020) have all been linked to climate change.

3.2.1 Natural disasters in the OECS

The OECS members are among the most disaster-prone economies in the world. Between 1950 and 2021, OECS countries (excluding the British Virgin Islands) experienced some 130 natural disasters, with the six OECS Commonwealth countries hit by 89 of said disasters. Most of the disasters affecting OECS Commonwealth countries were weather-related (storms); next most important were hydrological disasters that comprise floods and landslides. St Vincent and the Grenadines has also been prone to volcanic activities, with the latest eruptions of the La Soufrière volcano occurring in April 2021 (see Box 3.2). Dominica and Saint Lucia also experienced earthquakes, in 2004 and 2007, respectively.[23]

21 The concept of slow-onset events was initially introduced in the Cancún Agreement, emerging from Conference of the Parties (COP) 16) (UNFCCC, 2011).

22 See also https://www.usgs.gov/faqs/how-can-climate-change-affect-natural-disasters-1?qt-news_science_products=0#qt-news_science_products

23 In 2004, Dominica was struck by the 6.3 magnitude Les Saintes earthquake (www.uwi.edu/ekacdm/node/109). In 2007, Saint Lucia was hit by a similarly devastating earthquake (7.3 magnitude), which also affected other countries in the Eastern Caribbean (BBC, 2007).

Box 3.2: La Soufrière volcanic eruption

Amid the ongoing COVID-19 pandemic, on 9 April 2021, the La Soufrière volcano, the only active volcano on St Vincent and the Grenadines, erupted for the first time in 40 years. Having erupted 23 times in the past 4,000 years, it is considered one of the world's most active volcanoes.

The 2021 eruptions, which lasted until 22 April, resulted in significant ashfall and pyroclatic flows, mostly affecting the northern parts of the islands. Some of the poorest and most vulnerable felt the brunt of the impact as they were forced to evacuate their homes, leaving crops to be harvested as well as cattle, goats and other agricultural livestock. In fact, more than 23,000 people were displaced, having to seek refuge in shelters or with families and friends. The eruptions destroyed houses and other critical infrastructure; limited access to clean water for drinking, cooking and other household purposes; and depleted the islands' food stock. The key economic sectors, of agriculture, fisheries and tourism, were most affected. The heavy rainfall that followed in late April further complicated the already dire situation as it resulted in intense flooding, landslides and mud flows. In just a very short time span, this very vulnerable island state was battered by a range of natural disasters, including the pandemic, which continued to affect lives and livelihoods.

Source: OCHA et al. (2021).

Hurricanes and tropical storms also affect all OECS countries, as they typically ravage the Caribbean region during the notorious annual 'hurricane season' between June and September. In the past five to 10 years, Category 5 hurricanes have battered the islands, leading to cataclysmic losses. In fact, Commonwealth Caribbean SIDS experience the highest losses from natural disasters in terms of gross domestic product (GDP), with an annual average of 2.8 per cent, in contrast to the 0.3 per cent facing the rest of the world (Cebotari and Youssef, 2020). For many SIDS, damages well exceed the size of their economy. In the case of Dominica, 2017's Hurricane Maria resulted in damages totalling 226 per cent of its GDP. The economic damage caused meant that the country's output will have returned to pre-hurricane levels only in 2022 (Muñoz and Ötker, 2018). However, with the COVID-19 pandemic occurring just three years post-Maria, it is likely that this projection has been pushed further afield.

Additionally, countries of the OECS, alongside their neighbours in the wider Caribbean, also face several events attributed to climate change, such as the invasion of sargassum seaweed. Massive rafts of sargassum have been invading beaches across the Caribbean since 2011, gravely affecting marine life and tourism (Langin, 2018). To combat the issue, the OECS has bolstered international support from partners such as the World Bank and the World Maritime University, and in 2019 hosted the first ever International Conference on Saragassum, in Guadeloupe.[24] OECS countries,

24 https://pressroom.oecs.org/opening-of-the-1st-international-conference-on-sargasso

notably Saint Lucia, have also sought creative ways to rid the seas of sargassum, such as use of the seaweed as an organic agricultural manure.

3.2.2 The nexus between natural disasters and trade

Trade interacts with natural disasters in variable and complex ways and can be viewed from an observational level (e.g. changes in trade flows) and from a policy perspective (e.g. trade measures that can mitigate or exacerbate exposure to, and the effects of, natural risks) (Adinolfi, 2019). Under the former, natural disasters can lead to a sharp deterioration in trade balances as import bills rise for food, raw materials and reconstruction materials and, in turn, exports decline. Debt may also increase as imports put pressure on current accounts and tax revenues fall. Sluggish export recovery can constrain disaster recovery and add pressure to the financing gap when disaster losses exceed fiscal capabilities. For many developing countries, natural disasters can affect agriculture, leading to public stockholding for food security, price controls and export restrictions. In services sectors, damage to electricity and information and communication technology (ICT) may affect the post-disaster communications and electricity supply. Disasters may also bring to a halt major sectors of an economy, in particular tourism in the case of the OECS.

The trade impacts of natural disasters are exacerbated in smaller states as they are disproportionately dependent on trade for their economic activities. Under normal circumstances, trade and production costs are usually high, as are per capita costs of roads, ports and airport infrastructure (Slany, 2020), and export baskets are often concentrated in climate-sensitive sectors like agriculture, fisheries and tourism services. These factors, coupled with direct losses to export earnings as a result of damage to crops, assets and capital goods and destruction of critical connectivity infrastructure that facilitates trade, can affect trade performance. Evidence from one study suggests small developing countries' exports typically decline by up to 22 per cent in the wake of such impacts, with effects sometimes lasting for many years following a disaster (Adinolfi, 2019).

In Dominica, Hurricane Erika contributed to a large increase in imports and a decline in exports: Dominica's merchandise trade deficit widened from just under EC$100 million in 2016 to close to EC$250 million in 2017 (Adinolfi, 2019). In Grenada, the impacts of Hurricane Ivan were prolonged. When it hit in 2004, it destroyed approximately 90 per cent of nutmeg crops – a major contributor to GDP – and Grenada has still not recovered to pre-hurricane levels, losing its position as the world's second largest producer of nutmeg. Moreover, direct losses to production and services can also affect future trading relationships[25] as recovery of production is vital to maintaining links to international and domestic value chains. Natural disasters can similarly affect public perceptions of safety and the attractiveness of destinations, both of which are vital for success in the tourism sector. As we have seen in the Caribbean, the perception that the entire region has been destroyed by one hurricane or another has in some cases led to a decline in tourist arrivals (WTTC, 2018).

25 Rt Hon. Minister Douglas, Minister of Trade, Dominica highlighted the fact that re-establishing trade relationships was difficult as damage to major facilities such as pack houses affected exports (WTO, 2019a).

3.3 Trade, natural disasters and the multilateral trading system

As the previous section highlighted, OECS economies suffer the full gamut of natural disasters and often lack the capacity to respond, recover and build resilience. Trade policy can in some ways assist in mitigating these impacts by equipping countries with the tools to respond at each stage in the recovery process. This section thus examines the WTO's agenda on trade and natural disasters, the trade measures required in each of the three categories of disaster management - disaster response, disaster recovery and disaster resilience – and the extent to which the current WTO rules provide flexibilities or constraints or are agnostic to the needs of disaster-prone countries.

While WTO rules may be adapted to assist with natural disaster response and climate change mitigation, the WTO does not contain many rules specific to climate change or natural disasters,[26] nor is there a committee dedicated to these portfolios (WTO, n.d.a). Instead, issues relating to climate change fall under the more general work programme of the Committee on Trade and the Environment (CTE) (WTO, n.d.b), and natural disasters have been taken up, since 2018, within the Committee on Trade and Development under the Work Programme on Small Economies. The latter was initiated through the advocacy and efforts of the SVEs, a subset of small WTO Members recognised as such under the Doha Declaration, but established with a clear caveat by the WTO membership that it was not thereby creating a subgrouping of developing countries under the WTO.[27]

The OECS has been instrumental in advocating for a climate change and natural disaster agenda at the WTO. In 2017, as the intensity of disasters increased in the Commonwealth Caribbean, six OECS WTO Members, all SVEs, tabled a proposal at MC11 to bring attention to the catastrophic impact of natural disasters on SIDS and SVEs. They called for 'full flexibility' of the multilateral trading system to support disaster recovery and reconstruction (CARICOM, 2019). The proposal served as a catalyst for discussion on the need to address the challenges faced by disaster-prone SVEs at the WTO (WTO, 2019b), and contributed to the launch of the WTO's Natural

26 Note that some WTO provisions specifically mention natural disasters (AoA Annex 2 para. 8, SCM art. 6.7(c)).

27 SVEs represent a subgrouping of self-selected Members at the WTO that, in the period 1999–2004, had an average share of (i) world merchandise trade of no more than 0.16 per cent, (ii) world trade in non-agricultural products of no more than 0.1 per cent and (iii) world trade in agricultural products of no more than 0.4 per cent. They face particular challenges in world trade owing to lack of economy of scale or limited natural resources, for example. The Doha Declaration mandates the General Council to examine these problems and to make recommendations as to what trade-related measures could improve the integration of small economies into the multilateral trading system, without creating a separate category of WTO Members. The group gained traction as a negotiating group of 26 Members and one Observer, and many of its Members are particularly prone to natural disaster (see WTO, n.d.c). There are 35 SVEs in the WTO: Antigua and Barbuda, Barbados, Belize, Bolivia, Cabo Verde, Cuba, Dominica, Dominican Republic, El Salvador, Ecuador, Fiji, Grenada, Guatemala, Guyana, Honduras, Jamaica, Maldives, Mauritania, Mauritius, Mongolia, Nicaragua, Panama, Papua New Guinea, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Samoa, Seychelles, Sri Lanka, Tonga, Trinidad and Tobago, and Vanuatu. The Bahamas has observer status as it is currently negotiating its accession.

Disaster and Trade Project in 2018. This aims to assess whether and to what extent the multilateral trading system can support disaster-affected countries.

In 2019, under the Committee for Trade and Development's 39th Dedicated Session, discussions concerning the vulnerability of small economies to natural disasters were held through formal meetings on the Work Programme on Small Economies (WTO, 2020). A proposal was made by the SVE group for a Ministerial Decision at the 12th WTO Ministerial Conference (MC12) to include topics such as the impact of natural disasters on trade for small economies. More specifically, SVEs called for a study analysing vulnerability, the impact of natural disasters on SVEs and measures that could be used to strengthen national resilience considering WTO rules (ibid.). The proposal was subsequently adopted by ministers in their Decision on the Work Programme on Small Economies at the MC12 on 7 June 2022.

Since 2018, the WTO has conducted regional studies and held several symposia, resulting in two major studies in 2019 (WTO, n.d.d). Study I (WTO, 2019a) examined the trade effects of geophysical and meteorological hazards focusing on six disaster-affected countries, five of which are Commonwealth vulnerable economies. Study II (Adinolfi, 2019) considered how the issues discussed could be addressed under the existing WTO Agreements. The studies indicate that, while trade may not be a panacea for all disaster-related issues, it can be used as a tool in preparing, recovering and building resilience in the face of a disaster (WTO, 2019b).

3.4 Disaster response, recovery and resilience: a trade policy response

There are three key areas of disaster management for which trade responses are required: disaster response, disaster recovery and disaster resilience. It is important to note that the three phases are not perfectly airtight and, as such, trade responses may overlap.

In the disaster response phase, assistance begins with emergency relief to meet the basic needs of the country affected by disasters. This requires a trade response entailing, among other things, timely delivery of food, medicines, water and shelter from national, regional and international organisations and the diaspora, and from the government of the affected country itself; as well as the assistance of foreign personnel from development partners, neighbouring countries and/or humanitarian organisations (Wilkinson and Stevens, 2020).

The quality and rapidity of these responses will depend on the capacity of the disaster-affected country to adopt urgent trade measures in several areas, among them free entry of goods, facilitated border clearance, entry of foreign personnel and domestic support. Trade facilitation – whether through customs procedures or exemptions from customs rules or taxes – is a critical area of concern. The need to lower the barrier to entry for service providers in the aftermath of disasters is also critical. Services in immediate need, including debris management, construction and medical services are often provided by foreign personnel such as relief workers, doctors, construction workers and engineers, whose entry can be impeded by requirements for visas, licences or registration with local associations, as well as quotas.

Once the immediate needs of the population are addressed, a country transitions to short-term recovery, to ensure affected communities can return to some kind of normal existence. This phase can take weeks, months or even years depending on the severity of the disaster, initial vulnerability, access to resources, and the resilience and adaptability of a country. Recovery measures can include, for instance, the reconstruction of houses and infrastructure; the restoration of water, power and telecommunications; or the rehabilitation of transport infrastructure. In this phase, tariff exemptions or reductions to facilitate the importation of reconstruction material is crucial. Reduction in barriers to entry for qualified construction engineers and architects may also be necessary.

Finally, the resilience phase is focused on the concept of 'building back better' as set out in the Sendai Framework for Disaster Risk Reduction. Vulnerability reduction is taken into account with the view of ensuring that countries are able to withstand future shocks. During this phase, a country might be concerned with issues such as the need for an import tariff policy to aid in the creation of a ready-to-use list of items designated for relief in advance of a disaster, financial support *vis-à-vis* Aid for Trade to resuscitate their economies and better reconstruction. As pertains to the latter, newly constructed buildings must be able to withstand future natural disasters and, as such, the adoption of better construction standards (whether through materials or building techniques used) and the training of professionals and workers is paramount.

3.5 WTO flexibilities: a tool for disaster response, recovery and resilience

A number of WTO Agreements, though not specific to natural disasters, provide the policy space for SIDS, SVEs and other developing countries to draw on key provisions in responding to natural disasters. This may be done through provisions under specific Agreements or through certain exemptions to the rules or waivers permitted under the most favoured nation (MFN) provision or if considered 'necessary' for the protection of human, animal or plant life or health (General Agreement on Tariffs and Trade (GATT) Article XX), as well as those actions taken in times of emergency in International Relations (GATT Article XXI(b)(iii)).We highlight below some of these flexibilities.

3.5.1 Tariff reductions/exemptions

Tariff reductions/exemptions could be used to support both the disaster response and recovery phases (see Section 3.4). In this regard, WTO Agreements do not prevent countries from taking measures to suspend or reduce tariffs providing this is done on an MFN basis – that is, without discriminating among WTO Members. Where a country does not apply taxes on an MFN basis, however, it could potentially justify this action under the exceptions provided under:

- GATT Article XX, which permits countries to take actions that violate their WTO obligations if these measure are 'necessary' for the protection of human, animal or plant life or health that could justify certain countries (e.g. neighbouring ones) being exempt from customs duties and not others in times of emergency;

- GATT Article XXI(b)(iii), which allows Members to adopt WTO-inconsistent measures in times of emergency in international relations – a natural disaster that involves international institutions and donors in its aftermath could well be considered as such;
- the Trade Facilitation Agreement (TFA), which can also justify duty and tax exemptions for *de minimis* shipments (Article 7.8.2 (d)). Article 10.9.1 of the TFA also allows for the duty-free temporary admission of goods with a specific purpose to the extent that they are intended for re-exportation within a specific period and have not undergone any change. Imports of some necessary relief equipment could be considered as falling under this definition.

3.5.2 Customs clearance

A key concern for developing countries in the aftermath of natural disasters is ensuring the speedy entry of relief goods through donations or commercial imports. This is especially crucial during the disaster response and recovery phases (see Section 2.2) and will require efficient customs procedures. Customs clearance procedures that can be adopted in times of natural disasters are covered under the WTO's:

- Customs Valuation Agreement (Article 13), which specifies that a Member should allow, when necessary, the importer to withdraw the goods from customs before the determination of the customs value (and thus before the payment of customs duties). This specific measure can be used in times of natural disasters to speed up the clearance of relief goods and other essential items;
- the TFA, which, while not explicitly encompassing the clearance of disaster relief and recovery goods, contains provisions to support the efficient movement, release and clearance of goods in addition to provisions to promote effective border agency co-operation between customs and other intervening agencies. The TFA can facilitate the release and clearance of goods (Article 7), promotes border agency co-operation (Article 8) and enhances customs co-operation (Article 12), all of which are vital to facilitate the import of relief goods following a natural disaster.

3.5.3 Sector-specific domestic support

A major concern for countries in building resilience to natural disasters lies in ensuring that there is scope within existing trade rules for governments to design domestic support measures that have no or minimal distortive effect on trade in sectors most affected by natural hazards. In this regard, existing WTO rules provide flexibility for domestic support in both the agriculture and the non-agricultural sectors.

- **Agriculture:** A country may want to embark on public stockholding for food security to help build resilience to future shocks. Annex 2 of the WTO Agreement on Agriculture (AoA) allows for this. According to paragraph 3 and footnote 5 of Annex 2, public stockholdings whose operation is '*transparent and conducted in accordance with officially published objective criteria or guidelines*' (for developing countries) are permitted. Annex 2 also lists the programmes that are considered

as 'green box' measures – that is, programmes that are not trade-distorting and thus are not subject to reduction commitments, namely payments made for relief from natural disasters, limited to the loss incurred (para. 8) and food aid (para. 4) according to which Members can provide direct or indirect food assistance, under certain conditions and criteria related to nutritional objectives. Programmes that are not considered as green box measures are subject to a cap of 10 per cent of the Member's agricultural production (for developing countries). Added to this, under the peace clause (Bali 2013), developing countries cannot be challenged at the WTO even if their food security stockholding programmes are not in line with their domestic support limits, under certain conditions.

- **Other (or non-agricultural) sectors:** The WTO Agreement on Subsidies and Countervailing Measures can be used by governments in disaster-affected countries to provide assistance to the business sector as long as the measures are not export-contingent or domestic content-contingent, or cause serious prejudice to the trade of other WTO Members. The latter is very unlikely for support provided to Commonwealth small economies, including OECS countries, whose market share, in normal circumstances, is unlikely to cause global trade dislocations.

3.5.4 Reconstruction post-natural disaster

As highlighted in Section 3.2, better reconstruction is part of the toolkit for building resilience to natural disasters. The Agreement on Technical Barriers to Trade covers standards and technical regulations that are relevant for new construction codes, investment in climate-resilient systems, and identification and use of international best practice in construction (James, n.d). This often requires a country to upgrade its construction standards or technical regulations as it relates to the material and techniques used and with which imported goods and services must comply. Additionally, Article 5.2.1 of the Agreement provides that '*conformity assessment procedures are undertaken and completed as expeditiously as possible*'. Compliance with this provision when checking the conformity of the imported material can speed up its entry into the territory.

3.5.5 Entry of foreign services professionals

The entry of foreign services professionals to aid in responding to and recovering from natural disasters is paramount (see Section 3.4), especially for those services where supply in country is limited. To this end, the WTO's General Agreement on Trade in Services (GATS) allows foreign professionals to provide services based on the host country's GATS schedule of commitments or the conditions applied (if better than the ones of the schedule). Importing services from abroad can be done through four modes, in particular modes 1 and 4: mode 1 covers 'cross-border' services provision (e.g., engineers' consultancies to rehabilitate buildings or telecommunication) and mode 4 the entry of foreign providers to provide services (e.g., construction workers, humanitarian professionals, ICT staff). Note that a Member is bound by its schedule of commitments but nothing prevents it from further opening its market on an MFN basis (even on a temporary basis as in the case of natural disasters) if necessary.

3.5.6 Financial services

Direct financial support received either from the diaspora or from the humanitarian community is particularly important for small developing countries in responding to, recovering from and building resilience to natural disasters (see Section 3.4). This means that the country's financial sector needs to be sufficiently open and in line with international standards so as not to hinder money transfers in the form of remittances or cash aid towards national accounts in any way. Difficulties arise when the banking sector of the disaster-affected country is not well integrated in the international market and the importing country's banking sector takes stringent and punitive measures to combat alleged corruption, money laundering, etc. The issue of lost correspondent banking relationships is one that is familiar and vexing to many Commonwealth vulnerable economies of the OECS. Ability to receive money transfers can be facilitated through liberalisation of 'all payment and money transmission services'[28] in the WTO Member's schedule of commitments or the conditions that it applies (if better than the schedule). To the extent that the Member has liberalised these services in mode 1, the beneficiaries can access cash aid and remittances. Additionally, Members should try to adopt banking standards to prevent corruption, money laundering and other security-related issues.

3.5.7 Insurance and reinsurance services

Ensuring the quality of insurance and reinsurance services is a factor in a country's resilience to natural hazards. Businesses (in particular tourism), the population and the government need insurance pay-outs to rebuild the country and avoid further debt through dependency on international aid. For example, Dominica and Saint Lucia received pay-outs from the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company two weeks after the disasters. Notwithstanding, many disaster-vulnerable countries have low insurance coverage because of factors such as the high costs of these services, non-coverage of certain disasters, inadequate criteria and insufficient regulation.

3.6 Experience with WTO 'flexibilities'

The previous section highlighted the many possibilities that exist, in theory, to utilise flexibilities in the WTO rules and trade policy to prepare for and successfully overcome the impacts of natural disasters. In fact, there appear to be relatively few rules that *per se* prevent a country from taking needed measures to advance its agenda when disaster strikes, or to plan for impending disasters; in most cases, either the disciplines themselves do not interfere or exceptions are available to cover necessary action. Some rules, however, may pose challenges, including subsidy disciplines and procedural requirements, which may imply burdens and delays, such as those for safeguard investigations. Where the temporary protection of local industries is among the measures that may help, WTO obligations such as tariff ceilings (bindings) may pose limits and hence require the use of exceptions, which may not cover all desirable

28 WTO Services Sectoral Classification List, MTN.GNS/W/120.

cases. While the 'hard' limitations resulting from WTO disciplines in the context of disaster response may be limited, their effect is likely to be greater in the context of recovery and resilience, where more 'normality' has returned and may limit the use of exceptions. Here, an adapted interpretation of the rules may sometimes help but may not do so in all cases of need. Here and perhaps more broadly, a generally 'disaster-friendly' approach of the WTO as a system, including not only its rules but also its deliberative and co-operative functions, is needed.

This mixed picture underpins the call, advanced by proponents of the SVE agenda at the WTO, to dedicate further attention to disasters. Their practical experience puts into question the assumption that the WTO is always helpful in overcoming some of the endogenous vulnerabilities facing SVEs. Not all WTO Members are currently supportive of a natural disaster agenda. Their hesitation would appear to be political rather than legal in nature: SVE negotiators have for instance cited difficulties in agreeing on a definition of 'natural disaster' and the beneficiaries of a potential specific response; the developing country camp itself is fractured, with some objecting to the criteria for identifying SVEs; and among developed countries not all are in favour of the WTO's mandate extending to natural disaster concerns.

The failure to gain traction with the natural disaster work programme was demonstrated by the unsuccessful request made by Caribbean SVEs at MC11 to include specific language that would bring added focus to their concerns:

> *We note the destruction and loss of critical infrastructure and capacities at all levels caused during this year's unprecedented hurricane season, particularly to the Small Island Developing States and SVEs of the Caribbean and acknowledge that reconstruction and recovery and redevelopment will take many years. During this time WTO rules and disciplines must not stand in the way of reconstruction and we agree that the full flexibility of the multilateral trading system should be deployed so that reconstruction measures taken by the affected Members will be considered compatible with the WTO Agreements.*[29]

Although this proposal did not gain consensus, SVEs' representatives have continued to make statements in the Committee on Trade and Development. However, their requests sometimes suffer from lack of detailed explanation or are seen as too abstract to warrant deeper discussion.

From the discussion above, it is at least arguable that the WTO contains relatively few restrictions and even those demands that have been made are not particularly onerous. For example, it seems likely that a country will often be able to justify post-disaster measures under the national security exception under GATT Articles XX and/or XXI. In any event, it would seem likely that a declaration could be agreed that post-disaster situations could justify an expansive interpretation of either Article XX or Article XXI, or the granting of subsidies by governments of affected states. Suspension of dues to the WTO also does not seem unreasonable, and it is unlikely that any WTO Member would object to this proposal.

29 WT/MIN(17)/37.

It may be that, instead of the rules presenting constraints, *per se*, the reality is that other factors constrain countries' abilities to take advantage of the flexibilities in the rules. For instance, in lowering tariffs to import extra-regional cement as a construction material necessary to rebuild destroyed infrastructure, a SVE would have to consider how this would affect regional production and its competitiveness; or, in facilitating the entry of items or personnel post-disaster, a country will have to ensure that services professionals bear the appropriate competencies, and that the quality and safety of the imported items are assured, which may exhaust its resource capacity. These are some of the issues that have to be addressed that point less to a constraining or chilling impact of the rules and more to the way in which a country must balance its multiple priorities and considerations. That said, precisely the complexity, multitude and extent of challenges related to disasters, incumbent on both affected countries and their partners in the WTO, would appear to justify the call for a dedicated, comprehensive focus on disasters in the WTO, across all functions, bodies and agreements.

3.7 Natural disasters and current WTO negotiations

The ongoing negotiation theatres at the WTO – the multilateral negotiations on remaining issues on fisheries subsidies and the plurilateral Joint Statement Initiative (JSI) negotiations on e-commerce, investment facilitation for development and micro, small and medium enterprises – may hold some promise for integrating a more offensive approach to natural disasters into the prevailing thinking at the WTO. In particular, SVEs may wish to focus more attention on pressing their demands in the ongoing negotiation of 'newer' issues at the WTO. This would provide an opportunity not only to repackage the issues in a novel way but also to generate mutually constructive trade-offs with (developed country and other) demandeurs in the JSI discussions. The Trade and Environmental Sustainability Structured Discussions alongside the work of the Committee on the Environment also present a new platform for gaining new friends and greater visibility as these negotiations are expressly committed to drawing in civil society in a more inclusive and sustainable discussion. We outline below possible ways of including climate change and natural disasters on the agenda in three of the ongoing negotiations: fisheries subsidies, e-commerce and agriculture.

3.7.1 Fisheries subsidies

Disasters may affect fisheries and the fishing industry in different ways. Tropical storms, earthquakes and other events may affect the fish itself, reducing fish stocks, thus changing the benchmark for subsidy disciplines (making a stock 'overfished', all other parameters remaining equal). They may create exceptional pressure on fisherfolk to fish illegally (illegal, unreported and unregulated (IUU) fishing) and they may affect trading of fish (exports) and inputs (imports). More explicitly, disasters may affect fisheries businesses directly and indirectly through the destruction of boats, gear and on-shore infrastructure, including fisheries management-related institutions and installations.

OECS member countries can provide subsidies related to natural disasters under the agreed provisions of the Fisheries Subsidies Agreement adopted at MC12. The granting of subsidies for disaster relief must be limited to a particular disaster, geographical area and time period and be used to restore the affected fisheries fleet to its pre-disaster level (in the case of reconstruction subsidies). However, much depends on the implementation of this Agreement.

3.7.2 E-commerce and digital trade

Existing initiatives at the WTO, including the Work Programme on E-Commerce and the JSI negotiations on 'trade-related aspects of e-commerce', could have significant potential to improve and support disaster response, recovery and resilience for SVEs, including countries of the OECS. This could be done through the lens of greater advocacy for improved overall connectivity, and through standardising, expanding and strengthening e-government as well as the effective functioning of, and access to, international (and regional and national) payment systems to ensure the smooth flow of relief funding, among others. With respect to connectivity, a country facing disasters requires reliable, resilient and affordable access to international networks – including related services, bandwidth and transit. As such, ongoing discussions should consider, for example, a possible update of the telecoms Reference Paper, to include additional coverage – data – and disciplines. As for e-government, services such as the licensing of relief services, visas for relief personnel, processing of relief shipments and their smart administration (including prioritisation) should remain available and fluid during and after disaster hits. Finding common ground internationally to support these and other disciplines related to digital trade and the digital economy can contribute significantly to SVEs' disaster resilience.

3.7.3 Agriculture

The resilience of agricultural production is a key factor and concern for OECS countries, given that natural disasters often have severe impacts on their agriculture sectors. At the same time, agricultural production is itself a factor in climate change, from methane gas emissions from livestock farming to deforestation pressures resulting from agricultural expansion. Negotiations on agriculture – including on tariffs, export competition and domestic support – thus relate to natural disasters in more ways than can be discussed here.

MC12 achieved two major outcomes that contribute to the overall efforts of disaster relief. The first was a Decision to exempt World Food Programme humanitarian food purchases from export prohibitions or restrictions. The second addressed the emergency response to food insecurity by strengthening agriculture and food trade resilient markets.

As pertains to building food security and disaster resilience in this sector, WTO Members led by the Group of 33 (G33) have been discussing rules on public stockholdings (PSH) of essential agricultural supplies. While technically the discussions concern primarily the prices at which governments may stock their warehouses with domestically produced goods – and hence the extent to which such PSH may result in subsidisation – the reliable functioning of PSH systems themselves,

which may (or may not) be linked to the pricing system, can obviously be a major factor in disaster relief.

Seen from the perspective of disaster response, response, recovery and resilience, both domestic subsidies – including those provided in the context of PSH – and agricultural tariffs stand in the broader context of the tension between the benefits of maintaining a certain level of local supply capacity, especially for the purposes of food security, and the need for well-functioning external supply lines. The first may benefit from support systems and protective tariffs (even if the overall economic price for both may be high), while the second arguably benefits from more open trade and a sufficiently large volume of trade to sustain reliable business relationships and transport links that can carry weight in times of crisis. An emergency safeguard mechanism could arguably operate as a tool to counter the 'wrong' type of help – namely, shipments of excessive supplies that may crowd out and further damage remaining local production in times of crisis.

3.8 Conclusion

The discussion above illustrates that the WTO rules by and large do not seem to act as a significant 'hard' constraint on vulnerable economies' ability to respond, recover and build resilience in the face of natural disasters. There appear to be sufficient flexibilities under the rules to allow these countries to respond appropriately and with generally appropriate policy space to meet their development needs.

Equally, many WTO disciplines generally work towards facilitating trade, catalysing and steering countries towards greater regulatory and legal reforms, further harmonisation with international standards and accepted regulations that increase their trade readiness and ultimately their trade performance. Seen in that way, many trade rules can in fact assist countries in increasing disaster preparedness, creating blueprints and formulating and implementing *ex-ante* responses for when disaster strikes.

We have also witnessed instances where other WTO Members – responding to distressed states – have sought and obtained derogations from the rules – through waivers or otherwise – with relative ease to lessen the burdens on disaster-struck states, even if only on a temporary basis. This speaks to the conclusion that, in reality, beyond simple reliance on forbearance, WTO Members have found ways to offensively use available rules and mechanisms at their disposal to alleviate impacts of natural disasters. That said, the reliance on waivers (or *de facto* toleration) confirms that disciplines sometimes do initially limit what can be done in the context of a disaster, and that a dedicated focus on, and discussion about, the readiness of the WTO framework to deliver in this regard is called for.

We have also seen that many factors beyond the rules have a practical impact on the effectiveness of SVEs' trade responses. These include broader politics at the WTO and opposition to a natural disasters agenda, as well as the consequences of balancing a number of considerations – not all of which are trade-related – that a small country has to do when setting priorities. There is also a lack of specificity at times in the articulation of demands being made under the natural disasters agenda. That said, there are obvious limits to what the WTO, and trade rules in general, can achieve.

Conclusions

This book has provided a deep-dive on several different aspects that will be critical for resilient and sustainable post-COVID recovery in Organisation of Eastern Caribbean States (OECS) countries. Its three chapters each focus on different elements of the post-COVID recovery – from highlighting the opportunities available through the blue economy and the importance of leveraging opportunities and addressing challenges associated with the digital economy and e-commerce to adapting to the effects of climate change and recurrent natural disasters. A few overarching, general lessons can be drawn from the analyses presented in this book:

- **Leverage digital technologies:** Digitalisation appears to be inextricably woven into the future of the OECS countries. Digital trade and e-commerce can help support trade and economic diversification, which remains key to reducing volatilities and vulnerabilities resulting from the OECS countries' small size and remoteness. Digital technologies also have enormous potential to improve the efficiency and effectiveness of disaster risk management, facilitate the recovery of government operations and socio-economic sectors, and play a critical role in post-disaster recovery efforts. They can also be deployed to develop climate- and disaster-resilient transport systems in OECS countries. In the context of advancing the blue economy, digital technology can be key in developing high-value emerging sectors such as sustainable aquaculture, marine biotechnology and marine renewable energy.
- **Support micro, small and medium enterprises:** MSMEs form the backbone of the OECS economy and require support in the post-COVID recovery phases. OECS countries should assist MSMEs with capacity-building and technological development to help them overcome obstacles to e-commerce and to assist them to diversify. In this regard, the OECS should engage strategically with various development programmes that support the economic transformation of MSMEs, and work to increase awareness among entrepreneurs as well as government officials and civil servants.
- **Promote strategic investments:** Supporting resilient and sustainable recovery in the OECS countries will require considerable strategic investment, including in areas such as e-payments and logistics services, and in digital technologies that will be necessary to develop the blue economy. In this regard, it is important for the OECS to seek to attract such investment. This, in turn, will require identifying and addressing existing barriers to cross-border investments.
- **Link international trade agreements to development priorities:** Trade agreements can play an important role in sustaining the OECS countries'

post-COVID recovery strategies. Specifically, as is highlighted in the context of the Digital Economy Strategy, OECS members can leverage existing trade agreements such as the EU-Caribbean Forum Economic Partnership Agreement to facilitate investment in relevant services sectors, or use them as an impetus to develop digital enabling environments, including by adopting relevant laws and regulations. Several ongoing negotiations at the World Trade Organization (WTO) are relevant to the OECS. These include outstanding WTO fisheries negotiations on issues related to overfished stock, overfishing, overcapacity and special and differential treatment, and the Joint Statement Initiative on e-commerce. Participating in these negotiations has advantages and disadvantages for the OECS countries. To adopt an informed position, it will be important for the OECS to carefully analyse the impact of precise aspects of these negotiations on its post-COVID recovery plans.

- **Co-ordinate Aid for Trade and capacity-building:** As highlighted throughout this book, the OECS countries are the beneficiaries of many development assistance projects. It is important to capitalise on this assistance and ensure that Aid for Trade and other development assistance initiatives are aligned with the areas that the OECS has strategically identified as priorities, for example in developing an OECS Aid for Trade strategy. It is also key to have a central co-ordinator at the OECS level between the various donor initiatives.
- **Adopt a comprehensive, regional development strategy:** While the chapters in this book zoom in on specific challenges, for the recovery in OECS countries to be effective it is critical that the OECS adopt a wider, comprehensive approach to sustainable and resilient recovery – as opposed to one that is fragmented and reactionary. Such an approach would entail identifying leverage points and bottlenecks and adopting a set of policies accordingly. For example, this could entail supporting certain types of digital technologies with cross-sectoral benefits or focusing on economic sectors with promising export potential that would help with diversification. In developing such a comprehensive post-COVID strategy, it is also crucial that the OECS provide implementation strategies for the short, medium and long term.

References

Adinolfi, G. (2019) *Natural Disasters and Trade Research Study II: A Legal Mapping*. Geneva: WTO.

BBC (2007) 'Major Earthquake Shakes Caribbean'. 29 November. https://www.bbc.co.uk/caribbean/news/story/2007/11/071129_earthquake.shtml

Bahety, S. and J. Mukiibi (2017) *WTO Fisheries Subsidies Negotiations: Main Issues and Interests of Least Developed Countries*. Geneva: CUTS International.

Below, R., A. Wirtz and D. Guha-Sapir (2009) 'Disaster Category Classification and Peril Terminology for Operational Purposes'. Working Paper. Brussels: CRED.

Blaha, F. and K. Katafono (2020) 'Blockchain Application in Seafood Value Chains'. FAO Fisheries and Aquaculture Circular 1207. Rome: FAO.

Brathwaite, C., A. Nicholls and J.Y. Remy (2020) '*Trading Our Way to Recovery During COVID-19: Recommendations for CARICOM Countries*'. *Shridath Ramphal Centre Policy Document*. Bridgetown: Universities of the West Indies.

Business Research and Economic Advisors (2018) 'Economic Contribution of Cruise Tourism to the Destination Economies: A Survey-Based Analysis of the Impacts of Passenger, Crew and Cruise Line Spending'. Report prepared for the Florida-Caribbean Cruise Association and Participating Destinations.

CANARI (Caribbean Natural Resources Institute) (2019) 'The Caribbean Islands Biodiversity Hotspots: Technical Summary'. https://canari.org/wp-content/uploads/2017/08/cepf-caribbean-technical-summary-2019.pdf

CARICOM (Caribbean Community) (2019) 'CARICOM Statement on the Occasion of the Natural Disasters and Trade Symposium'. www.wto.org/english/tratop_e/devel_e/caricom_statement_from_the_floor.pdf

CDB (Caribbean Development Bank) (2018). *Financing the Blue Economy: A Caribbean Development Opportunity*. Bridgetown: CDB.

Cebotari, A. and K. Youssef (2020) 'Natural Disaster Insurance for Sovereigns: Issues, Challenges and Optimality'. Working Paper 20/3. Washington, DC: IMF.

Commonwealth Secretariat (2021a) *Assessment of Digital Trade and E-Commerce Readiness and Associated Capacity-Building in Six Member States of the Organization of Eastern Caribbean States (OECS)*. Final Report 2021. London: Commonwealth Secretariat.

Cromar, L. and K. Cromar (2020) 'Dengue Fever and Climate Change'. *Climate Change and Global Public Health*, 273–310. https://doi.org/10.1007/978-3-030-54746-2_13

CRFM (Caribbean Regional Fisheries Mechanism) (2016) 'Promoting Regional Trade and Agribusiness Development in the Caribbean: Case Studies on Linking Fisheries to

Day, J., A. Hughes, L. Greenhill and M.S. Stanley (2016) 'Blue Biotechnology'. Blue Economy Series 5. London: Commonwealth Secretariat.

De Vos, K. and B. Hart (2020) *The Ocean Finance Handbook: Increasing Finance for a Healthy Ocean*. Report prepared by Ocean Fox Advisory and the Friends of Ocean Action Secretariat on behalf of Friends of Ocean Action.

Diez, S.M., P.G. Patil, J. Morton et al. (2019) *Marine Pollution in the Caribbean: Not a Minute to Waste*. Washington, DC: World Bank.

Diouf, A., L. Schäfer, P. Jorks et al. (2021) 'Slow-Onset Processes and Resulting Loss and Damage - An Introduction'. Addressing Loss and Damage from Slow-Onset Processes Series. GermanWatch.

EIU (Economist Intelligence Unit) (2015) 'The Blue Economy: Growth, Opportunity and a Sustainable Ocean Economy'. Briefing paper for the World Ocean Summit 2015.

Ewing-Chow, D. (2019) 'Caribbean Islands Are the Biggest Plastic Polluters per Capita in the World'. Forbes Food & Drink, 20 September. www.forbes.com/sites/daphneewingchow/2019/09/20/caribbean-islands-are-the-biggest-plastic-polluters-per-capita-in-the-world/?sh=61438895774b

FAO (Food and Agriculture Organization of the United Nations) (2014) *The Sustainable Intensification of Caribbean Fisheries and Aquaculture*. Barbados: FAO.

Fujita, R., C. Cusack, R. Karasik et al. (2018) *Technologies for Improving Fisheries Monitoring*. San Francisco, CA: Environmental Defense Fund.

García de Jesús, E. (2019) 'Stanford Researchers Create Hydrogen Fuel from Seawater'. Stanford News, 18 March. https://news.stanford.edu/2019/03/18/new-way-generate-hydrogen-fuel-seawater/

GFDRR (Global Facility for Disaster Risk Reduction) (2017) *Climate and Disaster Resilient Transport in Small Island Developing States: A Call for Action*. Washington, DC: World Bank.

Girard, P. and T. Tu Payrat (2017) 'An Inventory of New Technologies in Fisheries'. Issue Paper prepared for the Green Growth and Sustainable Development Forum, Paris, 21–22 November.

Greenhill, L. (2014) 'Early Briefing Report on the Feasibility of Marine Renewable Energy in the Seychelles'. Briefing Paper prepared for the Commonwealth Secretariat.

Greenhill, L., J.G. Day, A. Hughes and M.S. Stanley (2016) 'Marine Renewable Energy'. Blue Economy Series 4. London: Commonwealth Secretariat.

Hansen, E.R. (2020) 'Prospective Study on Global Blue Economy Industrial, Investment and Technological Trends. Global Industrial and Technological Trends in the Blue Economy & Policies to Promote Growth in the Caribbean with a Focus on The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad & Tobago'. Selection # RG-T3342-P003. Bridgetown: IADB.

Haughton, M. (2001). *Fisheries Subsidy and the Role of Regional Fisheries Management Organisations: The Caribbean Experience*. Belize City: CRFM.

Herbert, S. (2019) 'Development Characteristics of Small Island Developing States'. K4D Helpdesk Report. Brighton: IDS.

Hughes, A., J.G. Day, L. Greenhill and M.S. Stanley (2016) 'Aquaculture'. Blue Economy Series 2. London: Commonwealth Secretariat.

IMF (International Monetary Fund) (2023) *Inflation Peaking amid Low Growth. World Economic Outlook Report*, January. Washington, DC: IMF.

James, R. (n.d) 'Trade and Natural Disaster Response'. https://www.wto.org/english/tratop_e/devel_e/01_ricardo_james_e.pdf

Jouanjean, M. (2019) 'Digital Opportunities for Trade in the Agriculture and Food Sectors'. Food, Agriculture and Fisheries Paper 122. Paris: OECD.

Kaplan, S. (2020) 'The Undeniable Link between Weather Disasters and Climate Change'. *The Washington Post*, 22 October. https://www.washingtonpost.com/climate-solutions/2020/10/22/climate-curious-disasters-climate-change/

Kituyi, M. (2021) '"Going Digital": How to Build an Inclusive Digital Economy in the Wake of COVID-19'. UNCTAD News, 29 January. https://unctad.org/news/going-digital-how-build-inclusive-digital-economy-wake-covid-19

Kulp, S.A. and B.H. Strauss (2019) 'New Elevation Data Triple Estimates of Global Vulnerability to Sea-Level Rise and Coastal Flooding'. *Nature Communications* 10: 1–12.

Lacey, S. (2021) 'Digital Reboot: The Case for a Newly Invigorated Aid for Digital Trade Initiative'. International Trade Working Paper 2021/10. London: Commonwealth Secretariat.

Langin, K. (2018) 'Mysterious Masses of Seaweed Assault Caribbean Islands'. *Science*, 11 June. https://www.sciencemag.org/news/2018/06/mysterious-masses-seaweed-assault-caribbean-islands

Leape, J., M. Abbott and H. Sakaguchi (2020) *Technology, Data and New Models for Sustainably Managing Ocean Resources*. Washington, DC: World Resources Institute.

Masters, J. (2018) *CRFM Statistics and Information Report: 2018*. Belize City: CRFM Secretariat.

McCauley, D., K. Teleki and G.F. Thienemann (2020) '8 Ways to Rebuild a Stronger Ocean Economy after COVID-19'. World Economic Forum Online Article, 12 May. https://www.weforum.org/agenda/2020/05/how-to-build-a-bluer-ocean-economy-after-cobid-19

McHale, A. (2018) 'Exploring Opportunities for Transformation to Inclusive, Sustainable and Resilient Economies in the Eastern Caribbean'. Technical Report 404. Port of Spain: CANARI.

Mitra, S. and J. And Vivekananda (2015) 'Understanding Conflict. Building Peace'. Compounding Risk: Disasters, Fragility and Conflict Policy Brief 1. London: International Alert.

Muñoz, S. and I. Ötker (2018) 'Building Resilience to Natural Disasters in the Caribbean Requires Greater Preparedness'. Country Focus, 10 December. Washington, DC: IMF.

Northrop, E., M. Konar, N. Frost and L Hollaway (2020). 'Using the Ocean as a Tool for Global Economic Recovery'. World Resources Institute Blog, 15 September. https://www.wri.org/blog/2020/coronavirus-ocean-blue-recovery

OCHA (United Nations Office for the Coordination of Humanitarian Assistance), United Nations Resident Commission Barbados and Business Guide: La Soufrière volcano eruption in Saint Vincent & the Grenadines'. Manual and Guideline, 12 May.

OECD (Organisation for Economic Co-operation and Development) (2016) *The Ocean Economy in 2030*. (OECD Publishing: Paris, 2016).

OECD (2020a) 'E-Commerce in the Time of COVID-19'. Brief, 7 October. Paris: OECD.
OECD (2020b) *Latin American Economic Outlook 2020: Digital Transformation for Building Back Better.* Paris: OECD.
OECS (Organisation of Eastern Caribbean States) Commission (2018) 'OECS Development Strategy (ODS) 2019–2028'. Castries: OECS Commission.
OECS Commission (2019) 'Eastern Caribbean Regional Ocean Policy'. Castries: OECS Commission.
OECS (Organisation of Eastern Caribbean States) Commission (2020a) *COVID-19 and Beyond: Impact Assessment and Responses*. Castries: OECS Commission.
OECS Commission (2020b) *A Blue Economy in the OECS*. E-Book 3 of 5. Castries: OECS Commission.
OECS Commission (2020c) 'OECS Green–Blue Economy Strategy and Action Plan'. Castries: OECS Commission.
OECS Commission (2021) 'St George's Declaration of Principles for Environmental Sustainability in the OECS 2040'. Castries: OECS Commission.
Patil, P.G., J. Virdin, S.M. Diez et al. (2016) *Toward a Blue Economy: A Promise for Sustainable Growth in the Caribbean*. Washington, DC: World Bank.
Ram, J. (2021) *Digital Transformation in the Eastern Caribbean*. https://www.eccb-centralbank.org/files/Growth%20and%20Resilience%20Dialogues/5th%20Growth%20and%20Resilience/Background%20Paper%20-%20Justin%20Ram.pdf
Ram, J., D. Ramrattan and R. Frederick (20219) *Measuring the Blue Economy: The System of National Accounts and Use of Blue Economy Satellite Accounts*. Working Paper 2019/02. Bridgetown: CDB.
Roberts, J. and A. Ali (2016) *The Blue Economy and Small States*. Commonwealth Blue Economy Series 1. London: Commonwealth Secretariat: London.
Saha, A. and J. Thorpe (2020) 'An Assessment of the Impact of COVID-19 Responses on MSMEs in the Informal Sector: Evidence from Commonwealth Countries in the Caribbean, Commonwealth Secretariat' Trade Competitiveness Briefing Paper 2020/02. London: Commonwealth Secretariat.
Seddighi, H. (2020) 'COVID-19 as a Natural Disaster: Focusing on Exposure and Vulnerability for Response'. *Disaster Medicine and Public Health Preparedness*, 27 July. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7492580/
Slany, A. (2020) 'Multiple Disasters and Debt Sustainability in Small Island Developing States'. Research Paper 55. Geneva: UNCTAD.
Stone, M. (2020) 'East Africa's Plague of Locusts and the Bizarre Climate Science Behind It'. *Science*, 14 February. https://www.nationalgeographic.com/science/article/locust-plague-climate-science-east-africa
Stuchtey, M., A. Vincent, A. Merkl et al. (2020) *Ocean Solutions That Benefit People, Nature and the Economy*. Washington, DC: World Resources Institute.
The Economist Group (2020) *A Sustainable Ocean Economy in 2030: Opportunities and Challenges*. London: The Economist Group.
Thompson, T.M., B.R. Young and S. Baroutian (2020) 'Pelagic Sargassum for Energy and Fertiliser Production in the Caribbean: A Case Study on Barbados'. *Renewable and Sustainable Energy Reviews* 118, February.

UN (United Nations) (2012) 'The Future We Want'. Outcome Document of the UN Conference on Sustainable Development (Rio+20), 20-22 June.
UNCTAD (United Nations Conference on Trade and Development) (2020) *The COVID-19 Pandemic and the Blue Economy. New Challenges and Prospects for Recovery and Resilience*. Geneva: UNCTAD.
UNCTAD (2021a) *Towards a Harmonized International Trade Classification for the Development of Sustainable Ocean-Based Economies*. UNCTAD/DITC/TED/2020/4. Geneva: UNCTAD.
UNCTAD (2021b) *COVID-19 and E-Commerce: A Global Review*. Geneva: UNCTAD.
UNCTAD (2021c) 'How COVID-19 Triggered the Digital and E-Commerce Turning Point'. UNCTAD News, 15 March. https://unctad.org/news/how-covid-19-triggered-digital-and-e-commerce-turning-point
UNCTAD (2021c) 'Small Island Developing States Face Uphill Battle in COVID-19 Recovery'. UNCTAD News, 10 June. https://unctad.org/news/small-island-developing-states-face-uphill-battle-covid-19-recovery
UNCTAD (2021d) *Digital Economy Report*. Geneva: UNCTAD.
UNCTAD (2021e) 'Impacts of the COVID-19 Pandemic on Trade in the Digital Economy'. Technical Note on ICT for Development 19. Geneva: UNCTAD.
UNEP (United Nations Environment Programme) (2021) *Turning the Tide: How to finance a sustainable ocean recovery—A practical guide for financial institutions*. Geneva: UNEP.
UNEP (2022) *Diving Deep: Finance, Ocean Pollution and Coastal Resilience*. Geneva: UNEP.
UNGA (United Nations General Assembly) (2019) 'Political Declaration of the High-Level Meeting to Review Progress Made in Addressing the Priorities of Small Island Developing States Through the Implementation of the SIDS Accelerated Modalities of Action (SAMOA) Pathway'. UNGA Res. A/RES/74/3, 10 October.
UNFCCC (2011) 'Report of the Conference of the Parties on its Sixteenth Session, Held in Cancun from 29 November to 10 December 2010'. FCCC/CP/2010/7/Add.1
UNFCCC (2012) 'Slow Onset Events'. Synopsis Series Technical Paper mandated by COP 17. https://unfccc.int/files/adaptation/application/pdf/soe_synopsis.pdf
UNHCR (United Nations Refugee Agency) (2017) *Key Concepts on Climate Change and Disaster Replacement*. Geneva: UNHCR.
UNIDO (United Nations Industrial Development Organization) (2021) 'Digitalisation Crucial to SIDS' COVID-19 Recovery, Long-Term Development'. UNIDO News, 12 January. https://www.unido.org/news/digitalisation-crucial-sids-covid-19-recovery-long-term-development
Wilkinson, A. and B. Stevens (2020) 'Natural Disasters and Recovery Efforts: Tapping into Trade Facilitation as a Response Tool'. *Trade Hot Topics 169*. London: Commonwealth Secretariat.
World Bank (2020) 'Proposed Credits and a Proposed Grant for a Caribbean Digital Transformation Project ("Digital Caribbean")'. Project Appraisal Document, 1 June.
World Bank and UNDESA (United Nations Department of Economic and Social Affairs) (2017) *The Potential of the Blue Economy: Increasing Long-Term Benefits*

of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. Washington, DC: World Bank.

WTO (World Trade Organization) (2019a) *Natural Disasters and Trade Study I*. Geneva: WTO.

WTO (2019b) *Natural Disasters and Trade Symposium Summary Report*. Geneva: WTO.

WTO (2019c) 'Background Note on de Minimis Level'. Informal Working Group on MSMEs, INF/MSME/W/4, 14 June.

WTO (2020) 'Committee on Trade and Development Thirty-Ninth Dedicated Session'. Note on the Meeting on 1 November 2019'. WT/COMTD/SE/M/39, 3 February.

WTO (n.d.a) 'The Multilateral Trading System and Climate Change: Introduction'. https://www.wto.org/english/tratop_e/envir_e/climate_intro_e.htm#:~:text=The%20issue%20of%20climate%20change

WTO (n.d.b) Climate Change and the Potential Relevance of WTO Rules'. https://www.wto.org/english/tratop_e/envir_e/climate_measures_e.htm

WTO (n.d.c) 'Doha Development Agenda: Negotiations, Implementation and Development – Groups in the Negotiations'. https://www.wto.org/english/tratop_e/dda_e/negotiating_groups_e.htm#GRP009

WTO (n.d.d) 'Research on Natural Disasters and Trade'. https://www.wto.org/english/tratop_e/devel_e/a4t_e/researchnaturdisaster_e.htm#:~:text=In%20April%202018%2C%20WTO%20members

WTTC (World Travel & Tourism Council) (2018) *Caribbean Resilience and Recovery: Minimising the Impact of the 2017 Hurricane Season on the Caribbean's Tourism Sector*. London: WTTC.

The Commonwealth

Following the severe impact of the COVID-19 pandemic, there is an opportunity to build back better by establishing sustainable economies that are more resilient to external shocks. For the countries of the Organisation of Eastern Caribbean States (OECS), achieving this will require addressing their unique vulnerabilities as small island developing states, including by focusing on opportunities to diversify and strengthen their economies. The book contains three different analyses on the sustainable blue economy, the digital economy and the impact of climate change and natural disasters, providing guidance to the OECS countries as they pursue their economic recovery efforts.

Enabling Sustainable Trade in the OECS is both timely and topical, providing a ready reference guide to some of the dynamics, opportunities, challenges and policy options associated with the ocean and digital economies.

ISBN 978-0-85092-005-5