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PART I

A background to island economies

Introduction

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Last year, the theme of the *Annual Report on Global Islands* was the impact of the COVID-19 pandemic on island development. Unfortunately, the pandemic continues to affect the social and economic development of island nations and territories. However, rather than publishing a '2.0' version of last year's COVID-19 themed report, we have opted to explore the progress by island governments in addressing the United Nations' Sustainable Development Goals (SDGs), as well as issues related to carbon neutrality, trade, and tourism. This does not suggest that the COVID-19 pandemic will be ignored; it would be naïve to think that it does not continue to affect almost every aspect of island development prospects. However, examining the 2030 Sustainable Development Goals on islands does allow us to look more closely at how jurisdictions may be building resilience so that they are better prepared for future extreme events.

An important part of the Islands initiative started by Hainan's Foreign Affairs Office is the annual 21st Century Maritime Silk Road Islands Economic Cooperation Forum, which is itself a part of the Boao Forum for Asia. This year, the 2021 Forum was held on April 15th and focused on the theme of promoting the building of ocean communities with a shared future. As in past years, the Forum invited senior-level government officials, scholars, non-governmental representatives, and senior executives from the private sector to participate. To protect the public health of attendees and the local Hainan population, this year's Forum once again adopted a hybrid format, with presentations made face-to-face and by video. The session was introduced and moderated by the Ambassador of Malta to China, Mr. John Aquilina. Mr. Aquilina welcomed those attending and stated that the session would include a video, several keynote speeches, short presentations by panelists, and announcements on new initiatives.

The video celebrated the accomplishments of this Forum over the past five years. In addition to these annual meetings, which serve as a regular benchmark for progress, successes include workshops, conferences, and publications. Two of the keynotes were delivered in person, one by the Governor of Hainan Province, Mr. Feng Fei, and a second by a representative of Mr. Wu Jianghao, Assistant Minister of Foreign Affairs of China. Two keynotes were also shown by video technology, one by Mr. Tearii Te Moana Alpha, who at the time of the Forum was the Vice President of French Polynesia and Minister of Agriculture, the Blue Economy and Domain, and the second by Ms. Gloria Macapagal Arroyo, Board Member of the Boao Forum for Asia and a former President of the

Philippines. In **Mr. Wu Jianghao's** remarks, he commended the organizers for twenty years of hosting the Boao Forum and congratulated them on the fifth anniversary of the Islands Economic Cooperation Forum. He indicated that mutual trust and respect has brought about the creation and growth of the free trade port on Hainan and recognition that Hainan serves as the pivot for the Maritime Silk Roads (MSR) initiative.

Hainan's **Governor Feng Fei** reminded those attending the Forum what all islanders know: that the ocean does not separate us — it connects us. He expounded on the success of the free trade port where, despite the COVID-19 pandemic, the number of new companies has doubled in the past year. He proposed four new initiatives to guide Hainan's future in the MSR initiative: 1) expand the free trade port; 2) expand industrial partnerships within Hainan and, as part of the global value chains, with other global partners; 3) protect the ocean environments; and 4) build international collaboration in establishing Hainan as a global hub in island studies research.

The virtual appearance by Mr. Alpha as a keynote speaker is a testament to the importance the organizers feel about including the voices from subnational island jurisdictions such as French Polynesia. Island states are critical partners in the MSR initiative but so too are semi-autonomous islands. **Vice President Alpha** reminded those present that many islanders, and especially those in the Pacific, prefer to think of their countries as "large ocean states" rather than the more conventional term of "small island states." This preference in terminology is in part symbolic, but also reflects the sheer magnitude of the marine areas for which many of these jurisdictions have responsibility — in many cases larger than that of continents. In French Polynesia, this is reflected in a popular saying that "the Earth is blue." The greatest challenge facing French Polynesia, together with their metropole France, is to reconcile two imperatives: to safeguard the physical environment and to develop the economy. He reminded us that protecting the environment does not necessarily mean forgoing economic opportunities. To illustrate his point, he noted that French Polynesia has taken on new initiatives, including expanding the concept of 'blue health' (i.e., deriving public health advances from marine resources) and creating a hub for international fisheries in the South Central Pacific. In her statement, **former President Gloria Arroyo** stressed the role that the Philippines has played in peacefully settling governance disputes in the South China Sea and in fisheries. She reminded everyone that, although humans may establish national marine boundaries, fish do not recognize these boundaries. Therefore, we must put in place processes that mobilize our expertise and promote cooperation across borders.

After these keynotes, the moderator asked the panelists, two of whom made their presentations by video, to come to the front of the room and give short statements on one or more of the topics of island governance, the marine economy, marine environmental protection, and/or ocean cooperation between China and ASEAN nations. **Mr. Djauhari Oratmangun**, the Ambassador of Indonesia to China, noted that Indonesia

is an archipelagic nation, with at least 6,000 inhabited islands. He reminded us that Indonesia established the Archipelagic and Island States Forum in 2017 to address climate change and marine issues in light of SDG 14 (*conservation and sustainable use of oceans, seas, and marine resources for sustainable development*). He pointed to one specific example where China and Indonesia have cooperated in bringing together the Belt and Road Initiative with Indonesia's Global Maritime Fulcrum initiative to expand the digital economy. **Dr. Palitha T. B. Kohona**, the Ambassador of Sri Lanka to China, reminded all present that we are surrounded by the sea and it has conditioned us for centuries. Sri Lanka was long considered an entrepôt or trading centre throughout the Indian Ocean region and beyond, a role that Hainan is striving to establish for itself now as a hub in the MSR initiative.

As the UNESCO Chair in Island Studies and Sustainability, Prince Edward Island's **Dr. James Randall** reminded us of the difference between government and governance, where the latter term encompasses a much larger group of stakeholders. He noted that it may be easy to make laws but, if you really want them to be effective, you need to have all parties participating right from the planning stage. He ended his video presentation by calling for action in four areas: more and better data on which to base our policies and strategies (especially for semi-autonomous islands); create and strengthen mechanisms for islanders' voices to be heard, in addition to involving leaders of island states; reach out to leaders of both island states and SNIJs; and "island proof" your legislation to ensure that islands are not marginalized in national policy discussions. The President of the Pacific–China Friendship Association, **Mr. Hiria Ottino**, also spoke to the issue of island governance by video. Given the highly dispersed and diverse islands in the Pacific, the greatest challenge facing them is governance, and in particular whether to centralize or disperse the delivery of public services. Either choice has its advantages and disadvantages. He told the Forum that island nations need to be open economically, but to also be cautious that this openness does not significantly damage local employment opportunities. This theme of economic and trade openness is taken up later in this Report in the chapter by Carmichael and Jia.

Finally, the Deputy Director-General of the Island Research Center at China's Ministry of Natural Resources, **Mr. Feng Aiping**, reminded us of the importance of cooperation in protecting island coastal ecosystems. Island communities and their physical environments are more resilient and creative when local communities guide the process in their own backyards. Up to 2018, using the ecological red line policy, China's central and local governments have invested more than 10 billion yuan to restore the ecologies of 3,000 coastal islands.

The 2021 Islands Economic Cooperation Forum ended with two exciting announcements. The first announcement, made by video by Dr. Randall, was that Hainan was about to establish its own Island Research Centre. Based on consultations with international experts, this new think tank would be both local and global in scope, would

focus on issues that are critical to the development of Hainan and that have international relevance, and would have both Chinese and international partners. One of the advantages held by Hainan in this initiative is the foundational role played by these Forums which, from the start, have emphasized the importance of bringing together island scholars, government departments, non-governmental organizations, and executives of private sector corporations in resolving sustainable island development issues. The second announcement, made by Mr. Wang Sheng, who at the time of the Forum was the Director-General of the Foreign Affairs Office of Hainan Province, was the release of the *2020 Annual Report on Global Islands*. As noted above, this volume provided new peer-reviewed research from Chinese and international experts on island development during the COVID-19 public health crisis.

SUMMARY OF CHAPTERS

As with previous editions of the Annual Reports, this Report is divided into three sections: a) an initial background that summarizes the 2021 Islands Economic Cooperation Forum and provides an overview of the chapters in this volume, and a chapter which updates and interprets the development statistics of the island states and subnational islands that are part of this research; b) several chapters that address aspects of island development, in this case pertaining to the United Nations' Sustainable Development Goals; and c) chapters that focus on environmental protection, trade, and tourism.

Two years into the COVID-19 pandemic is an opportune time to discuss the Sustainable Development Goals (SDGs). Not only should we take stock of progress towards achieving these 17 goals as we approach the 2030 deadline, but the COVID-19 pandemic has prompted many jurisdictions to reassess their progress in meeting their development goals. In some cases, progress has stalled or worsened, making islands even more vulnerable to crises. In other cases, island governments have become more proactive, investing in policies and actions that will bring them closer to meeting the SDGs while also making them more resilient to the next public health crisis, economic dislocation, or the existential threat posed by global warming.

Chapter 1 (Randall and Su) carries on the tradition of compiling and interpreting the most recent development statistics for a set of 48 island states and 13 island territories. As with previous editions of the Annual Report, this narrative goes beyond describing the patterns in the tables. It introduces the most recent peer-reviewed literature on the topic and, where applicable, focuses on explaining islands that appear to be anomalous when analyzing some of the characteristics. It also takes a longer time frame, often showing how islands have changed over the past five to ten years. An indicator of the usefulness of these statistics is that several of the contributors to this volume have used the statistical profiles from previous editions of the Annual Reports to argue their positions.

In Chapter 2, Mohan provides us with an overview of the progress islands have made in addressing the SDGs, especially during the most recent two years. Focusing on island states and subnational islands that are part of earlier Annual Reports, the author uses indicators of SDG progress developed by Sachs and colleagues (2020, 2021) and compares these to the SDG reports produced by island governments, and especially their Voluntary National Reviews. In so doing, Mohan measures their actual progress against their rhetoric. Overall, islands have made more substantial progress on the SDGs related to education (SDG 4), clean energy (SDG 7), and climate action (SDG 13), and less progress on eliminating poverty (SDG 1) and hunger (SDG 2), and improving health (SDG 3). Given that all of these places are islands, most disconcerting is that the greatest challenges are related to SDG 14 (*life below water*) and SDG 15 (*life on land*). It should come as no surprise that islands within the developed world have made more substantial progress at meeting the SDGs than those in the developing world. Based on several case studies, Mohan concludes that there is great potential for islands to make progress in the areas of green energy, the blue economy, and digital transformation.

Chapters 3 reflects on specific SDGs in relation to island development. The chapter by Moncada and Randall (Chapter 3) addresses what some research suggests is a critical component to achieving the SDGs: the relationship between island residents' perceptions regarding how well their governments have addressed the SDGs versus the actual actions taken. The chapter also explores the influence of other factors in this relationship, including wealth, population size, and political independence. One finding is that there is a much closer association between perceptions and government actions in small island states than in SNIJs.

Chapter 4 (Sindico) continues the theme of examining carbon neutrality, starting with the context of small islands and then using the lessons learnt to apply successful policies elsewhere. Sindico outlines how influential islands have already been in shaping the global climate change debate, including at the 2021 COP26 meetings in Glasgow, Scotland. The chapter lays out the rationale for this attention, including the perils that many islands face with rising sea levels and more intense weather events, as well as challenges facing islands in implementing and monitoring the success of island net zero pathways. The author uses the example of the Scottish archipelagos to illustrate those successes and challenges.

In Chapter 5, Carmichael and Jia question the accuracy of the neoliberal contention that trade liberalization, in the form of trade agreements that reduce tariff barriers, automatically leads to economic growth for all participating countries. Using a forty-year data set (1970–2010) from thirteen Small Island Developing States (SIDS) in the Pacific, they conclude that being a party to global trade agreements such as membership in the World Trade Organization did not necessarily lead to economic development for those islands. Participating in regional trade agreements, however, was much more likely to benefit SIDS economically.

Islands have been challenged with developing creative ways to protect the environment while not losing the economic benefits associated with international tourism. It is apparent that regulation alone may not achieve the desired goals. In Chapter 6, Graci shows that there are many examples where islands have effectively used non-regulatory tools to preserve vulnerable ecosystems, despite the pressures of tourism. The chapter concludes that one of the keys to success is to ensure that local communities are active participants in developing, implementing, and enforcing the strategies. This results in approaches that fit local contexts and are overseen by local stakeholders.

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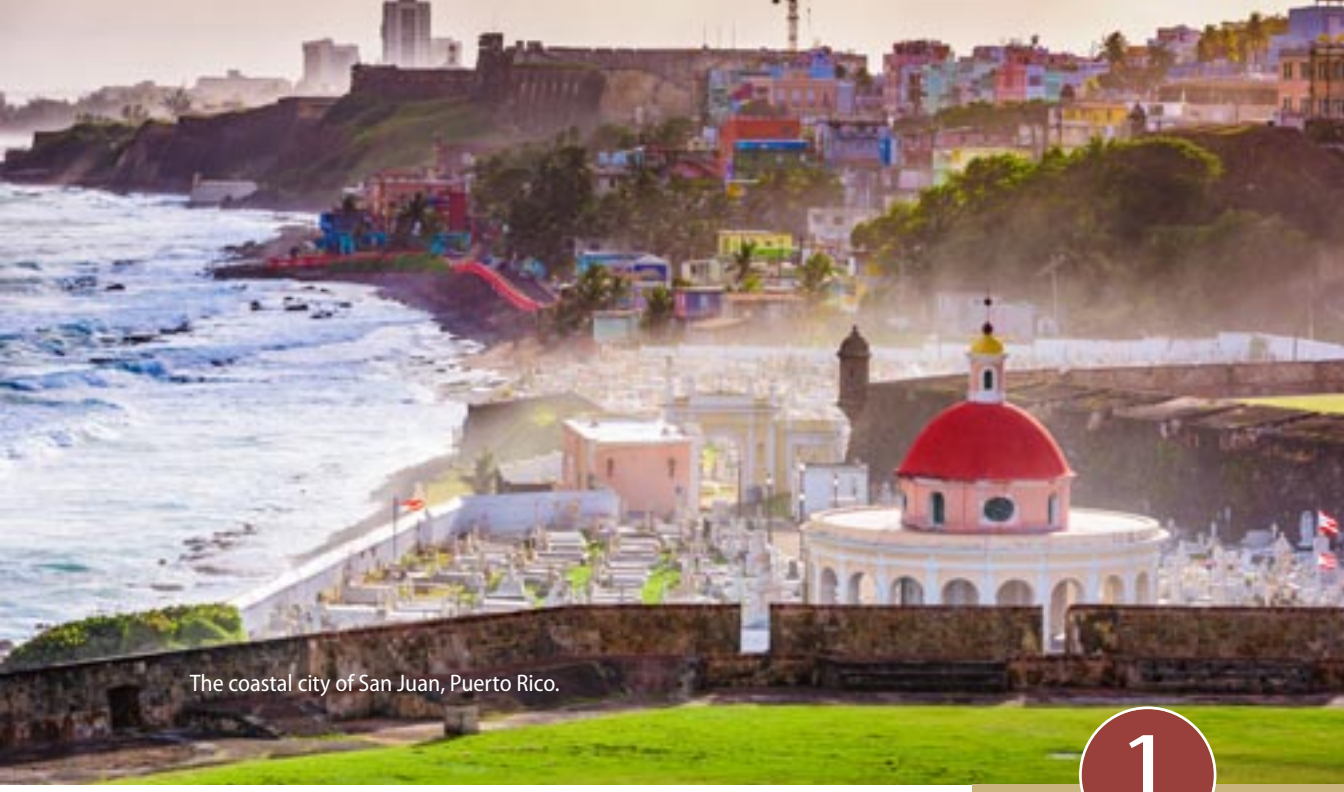

The coastal city of San Juan, Puerto Rico.

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The state of island economies and development in 2021

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Every year, this Annual Report starts by providing a series of numerical data files in the form of tables consisting of economic and development characteristics for a subset of island states and sub-national island jurisdictions (SNIJs). Although the values may not change significantly from one year to the next, by providing and updating the same characteristics annually, readers of the series are able to see subtle changes taking place on these islands. This year, we have taken that one step further by adding new columns on many of the tables, showing change over longer time periods. So, for example, instead of showing the population growth rate between 2019 and 2020, Table 1.1 in this volume now shows population growth over the eleven-year period from 2010 to 2021. Also, Table 1.3 shows the percent change in the urban share of the population over the past six years. We hope that this makes it easier to see beyond the minor annual changes to reveal more sustained changes.

Despite the use of the word 'economies' in this chapter's title,

past issues of these Annual Reports have encompassed 'island development' in the broadest interpretation of the term. For example, several chapters in the 2020 Annual Report emphasized public health variables during the COVID-19 pandemic. This theme was reflected in the use of characteristics such as causes of death, government expenditures on health as a share of total expenditures, and prevalence of obesity. This year, we are focusing more explicitly on the United Nations' Sustainable Development Goals (SDGs) and, in consideration of the 2021 COP26 climate meetings in Glasgow, Scotland, island innovation in climate change policy. Although the statistical tables in this chapter may not directly address these two themes, we encourage you to review some of the summary statistics on these subjects in the complementary chapters, including those by Mohan, Sindico, and Moncada and Randall.

SECTION 1: ISLAND STATES

Only eight of the 48 island states represented in Table 1.1 saw an absolute decrease in their populations over the past decade. Only in Japan can the cause of that population decline be described by the demographic transition and industrialization in the modern industrial world. Japan has a declining birth rate and an aging population that some predict will see the labour force decrease to 70% of its current level by 2050 (Fukuyama, 2018). Fukuyama (2018) goes on to suggest that these demographic changes are mere symptoms of a larger digital transformation of Japanese society that may provide opportunities for this archipelagic country to meet the Sustainable Development Goals

TABLE 1.1: Population, Population Density, and Average Annual Population Growth Rate, 2010 to 2021

Continent	Island Country	Population in 2021	Population density (people/km²) 2020	Population in 2010	Population Growth Rate (%) 2010-2021
Asia	Japan	124,687,293	345	128,070,000	-2.64%
	Singapore	5,866,139	8019.474	5,076,732	15.55%
	Indonesia	275,122,131	145.684	241,834,226	13.76%
	Timor-Leste	1,413,958	88.665	1,093,517	29.30%
	Brunei Darussalam	471,103	83.014	388,634	21.22%
	Philippines	110,818,325	367.512	93,966,784	17.93%
	Sri Lanka	22,889,201	354.309	20,261,738	12.97%
	Maldives	390,669	1801.807	365,730	6.82%
	Bahrain	1,526,929	2181.517	1,240,864	23.05%
Europe	Cyprus	1,281,506	130.667	1,112,617	15.18%
	Iceland	354,234	3.634	318,041	11.38%
	United Kingdom	67,215,293 (World Bank data)	277.83	62,766,365	7.09%
	Ireland	5,224,884	72.503	4,560,155	14.58%
	Malta	460,891	1641.516	414,508	11.19%

— if not in 2030, then at least by 2050. Several of the other islands experiencing net population decline or stagnation over the 11 years represented in this table, such as the Federated States of Micronesia and Nauru, have taken place because of a massive outmigration of Indigenous peoples, moving largely for economic reasons and to former colonial metropoles (Connell, 2018). Although this is especially the case in islands of the Pacific (or Oceania), there has also been population outmigration or

Continent	Island Country	Population in 2021	Population density (people/km^2) 2020	Population in 2010	Population Growth Rate (%) 2010-2021
Africa	Cabo Verde	589,451	137.962	492,644	19.65%
	Madagascar	27,534,354	47.595	21,151,640	30.18%
	Seychelles	96,387	214.048	89,770	7.37%
	Mauritius	1,386,129	623.517	1,250,400	10.85%
	Comoros	864,335	467.273	689,696	25.32%
	São Tomé and Príncipe	213,948	228.293	180,372	18.61%
Oceania	New Zealand	4,991,442	19.309	4,350,700	14.73%
	Papua New Guinea	7,399,757	19.757	7,310,512	1.22%
	Solomon Islands	690,598	24.54	527,861	30.83%
	Vanuatu	303,009	25.197	236,216	28.28%
	Fiji	939,535	49.066	859,816	9.27%
	Tonga	105,780	146.801	103,981	1.73%
	Samoa	204,898	70.11	185,944	10.19%
	Nauru	9,770	541.7	10,009	-2.39%
	Micronesia, Fed. States	101,675	164.316	102,916	-1.21%
	Marshall Islands	78,831	328.856	56,361	39.87%
	Kiribati	113,001	147.464	102,930	9.78%
	Tuvalu	11,448	393.067	10,521	8.81%
	Palau	21,613	19.012	17,954	20.38%
	Cook Islands	8,574	–	–	–
	Niue	2,000 (2019)	–	–	–
Caribbean/	Cuba	11,032,343	109.12	11,225,833	-1.72%
Americas	Haiti	11,198,240	413.735	9,949,318	12.55%
	Dominican Republic	10,597,348	224.548	9,695,117	9.31%
	Jamaica	2,816,602	273.422	2,810,464	0.22%
	Bahamas, The	352,655	39.286	354,936	-0.64%
	St. Kitts and Nevis	54,149	204.585	49,011	10.48%
	Antigua and Barbuda	99,175	222.564	88,030	12.66%
	St. Vincent and the Grenadines	101,145	284.479	108,260	-6.57%
	St. Lucia	166,637	301.031	174,092	-4.28%
	Grenada	113,570	330.938	106,227	6.91%
	Barbados	301,865	668.305	282,131	6.99%
	Trinidad and Tobago	1,221,047	272.805	1,328,144	-8.06%
	Dominica	74,584	95.988	70,877	5.23%

stagnation on some of the Caribbean islands. Some of this is attributable to emigration after extreme weather events (Spencer & Urquhart, 2018). For example, Puerto Rico saw a dramatic exodus to the mainland USA following the 2017 hurricane season (Alexander et al., 2019).

Although not presented here in the form of data, we should not overlook the existence of intra-regional migration. Not all emigrants from islands in the Pacific and the Caribbean are destined for the larger, more developed countries of New Zealand, Australia, and the United States. There is a fair amount of movement between islands within each of these regions. American Samoa (54%) and Tokelau (31%) are the destinations of the largest share of Pacific regional migrants, while the US Virgin Islands (82%), Sint Maarten (57%), the British Virgin Islands (46%), Antigua and Barbuda (36%), and the Turks and Caicos Islands (36%) have the highest proportion of intra-Caribbean immigrants (Rai, 2019). Many of these destination islands are semi-autonomous territories, often receiving immigrants from other islands in the region sharing the same colonial metropole. The other, less visible mobility pattern taking place is the movement of people from smaller, more remote islands to more central and urbanized islands within an archipelago (Connell & Aldrich, 2020).

The beautiful, warm colours of Saint Thomas, in the US Virgin Islands. These islands have the highest proportion of intra-Caribbean immigration, at 82%.

TABLE 1.2: Crude Birth Rate, Crude Death Rate, and Life Expectancy at Birth, 2021

Continent	Island Country	Crude Birth Rate/1000	Crude Death Rate/1000	Life Expectancy at Birth
Asia	Japan	7.0	11.4	84.7
	Singapore	9.1	3.9	86.2
	Indonesia	15.6	6.7	72.8
	Timor-Leste	31.5	5.7	69.6
	Philippines	22.7	6.0	70.3
	Sri Lanka	14.0	6.5	77.8
	Maldives	15.7	4.1	76.7
	Bahrain	12.5	2.8	79.7
Europe	Cyprus	10.8	6.9	79.5
	Iceland	13.1	6.6	83.5
	United Kingdom	11.8	9.4	81.3
	Ireland	12.6	6.7	81.5
	Malta	9.8	8.4	83.0
Africa	Cabo Verde	18.8	5.8	73.5
	Madagascar	22.9	6.1	67.9
	Seychelles	12.6	6.8	75.8
	Mauritius	12.4	7.2	76.7
	Comoros	23.0	6.6	66.9
	São Tomé and Príncipe	28.9	6.3	66.7
Oceania	New Zealand	12.8	6.9	82.3
	Papua New Guinea	22.1	6.0	69.9
	Solomon Islands	23.1	4.0	76.5
	Vanuatu	22.0	4.0	74.8
	Fiji	16.9	6.3	74.0
	Tonga	20.6	4.9	77.3
	Samoa	19.3	5.4	74.9
	Nauru	21.5	6.2	67.6
	Micronesia, Fed. States	18.7	4.2	74.2
	Marshall Islands	22.4	4.3	74.4
	Kiribati	20.3	6.9	67.6
	Tuvalu	23.0	8.0	68.1
	Palau	11.5	8.2	74.4

Continent	Island Country	Crude Birth Rate/1000	Crude Death Rate/1000	Life Expectancy at Birth
	Cook Islands	12.9	8.9	76.9
	Niue	6.3 (June 2019)	7.5 (June 2019)	N/A
		3.0 (Dec. 2019)	1.2 (Dec. 2019)	N/A
Caribbean/	Cuba	10.3	9.2	79.4
Americas	Haiti	21.4	7.3	65.6
	Dominican Republic	18.2	6.3	72.3
	Jamaica	16.0	7.4	75.5
	Bahamas, The	14.8	6.3	75.9
	St. Kitts and Nevis	12.4	7.2	76.8
	Antigua and Barbuda	15.3	5.6	77.6
	St. Vincent and the Grenadines	12.4	7.4	76.4
	St. Lucia	12.3	8.0	78.7
	Grenada	14.3	8.3	75.5
	Barbados	11.0	7.9	78.3
	Trinidad and Tobago	11.1	8.7	74.9
	Dominica	14.2	8.1	78.0

Among the islands in this report, there remains a sharp divide among those places wherein population change is driven by natural growth and those where changes are driven largely by migration. The significant gap between the birth and death rates in places such as Timor-Leste, the Philippines, Madagascar, and Haiti, as seen in Table 1.2, points towards continued natural population growth. Those where the birth rates have either been lower than the death rates (e.g., Japan) or are approximately the same (e.g., Malta and the United Kingdom) have seen population stagnation or decline (before migration is factored in). There is also a strong correlation between those places where natural population growth is negative, life expectancy at birth, and the average age of islanders. The only island countries where the life expectancy at birth is greater than 80 years of age are in the developed world.

TABLE 1.3: **Urban Population Share, 2015, 2020, and 2021**

Continent	Island Country	Urban Population (%)			Change in Urban Population % from 2015 to 2021
		2015	2020	2021	
Asia	Japan	93.5	91.8	91.9	-1.7%
	Singapore	100.0	100.0	100.0	0
	Indonesia	53.7	56.6	57.3	+6.7%
	Timor-Leste	32.8	31.3	31.7	-3.4%
	Brunei Darussalam	77.2	78.3	78.6	+1.8%
	Philippines	44.4	47.4	47.7	+7.4%
	Sri Lanka	18.4	18.7	18.9	+2.7%
	Maldives	45.5	40.7	41.1	-9.7%
	Bahrain	88.8	89.5	89.6	+0.9%
Europe	Cyprus	66.9	66.8	66.9	0
	Iceland	94.1	93.9	93.9	-0.2%
	United Kingdom	82.6	83.9	98.1	+18.8%
	Ireland	63.2	63.7	63.9	+1.1%
	Malta	95.4	94.7	94.8	-0.6%
Africa	Cabo Verde	65.5	66.7	67.1	+2.4%
	Madagascar	35.1	38.5	39.2	+11.7%
	Seychelles	53.9	57.5	58.0	+7.6%
	Mauritius	39.7	40.8	40.8	+2.8%
	Comoros	28.3	29.4	29.6	+4.6%
	São Tomé and Príncipe	65.1	74.4	75.1	+15.4%
Oceania	New Zealand	86.3	86.7	86.8	+0.6%
	Papua New Guinea	13.0	13.3	13.5	+3.8%
	Solomon Islands	22.3	24.7	25.1	+12.6%
	Vanuatu	26.1	25.5	25.7	-1.5%
	Fiji	53.7	57.2	57.7	+7.4%
	Tonga	23.7	23.1	23.1	-2.5%
	Samoa	19.1	17.9	17.7	-7.3%
	Nauru	100.0	100.0	100.0	0

Continent	Island Country	Urban Population (%)			Change in Urban Population % from 2015 to 2021
		2015	2020	2021	
	Micronesia, Fed. Sts.	22.4	22.9	23.1	+3.1%
	Marshall Islands	72.7	77.8	78.2	+7.6%
	Kiribati	44.3	55.6	56.3	+27.1%
	Tuvalu	59.7	64.0	64.8	+8.5%
	Palau	87.1	81.0	–	-7.0%
	Cook Islands	75.0 (2014)	75.5	–	+0.7%
	Niue	38.0 (2014)	46.2	–	+21.6%
Caribbean/	Cuba	77.1	77.2	77.3	+0.2%
Americas	Haiti	58.7	57.1	58.0	-1.1%
	Dominican Republic	78.9	82.5	83.2	+5.4%
	Jamaica	54.8	56.3	56.7	+3.4%
	Bahamas, The	82.9	83.2	83.4	+0.6%
	St. Kitts and Nevis	32.1	30.8	30.9	-3.7%
	Antigua and Barbuda	23.8	24.4	24.4	+2.5%
	St. Vincent and the Grenadines	50.6	53.0	53.5	+5.7%
	St. Lucia	18.5	18.8	18.9	+2.1%
	Grenada	35.6	36.5	36.7	+3.1%
	Barbados	31.6	31.2	31.2	-1.2%
	Trinidad and Tobago	8.5	53.2	53.3	+527.1%
	Dominica	69.5	71.1	71.4	+2.7%

Table 1.3 shows that urbanization continues to be one of the most pervasive human mobility trends of the late 20th and early 21st centuries. In all but 12 of the 48 island states listed, the proportion of the island population defined as 'urban' increased from 2015 to 2021. Among those 12 that saw a decrease in their relative urban population, such as Iceland, Malta, and Japan, they have likely reached a level of urban saturation that discourages any further urbanization. In Henderson and Turner's (2020, p. 150) words, these metropolises are "fully urbanized," and may even run the risk of becoming obsolete (Glaeser, 2000). In others, such as Timor-Leste and Haiti, the diseconomies of

living in a large city that may no longer offer the same kinds of employment opportunities or urban amenities that had been the case in the past may be causing some rural households to reconsider the rural to urban move. Particularly if urbanization takes place without a parallel increase in per capita incomes, "poorer countries cannot afford the ideal investments required to catch-up with rapid industrialization" (Henderson & Turner, 2020, p. 150). The continued urbanization on several of the Pacific islands may be a function of the growth of "informal urban" villages, a term used by Jones (2016a,b) to describe informal and squatter settlements in any vacant space near the main city that is not formally planned or developed by municipal governments (e.g., edges of rivers, electricity easements, and even waste disposal sites). For example, Maebuta and Maebuta (2019) reported that in Honiara, the capital of the Solomon Islands, illegal squatter settlements on government land were growing at a rate of 26% per year, resulting in 17,000 of the 50,000 city's residents being illegal squatters.

THE CONTINUED URBANIZATION on several of the Pacific islands may be a function of the growth of "informal urban" villages, a term used to describe informal and squatter settlements in any vacant space near the main city that is not formally planned or developed by municipal governments.

Note that the concepts of 'urban' versus 'rural' on some small islands may be more complicated than in mainland regions. For example, the description of Singapore as a city-state infers that the entire space is taken over by urban functions. Indeed, Grydehøj and Swaminathan (2018) note that some of the most densely populated cities are located on islands. Even when some of the island landscape may appear to be rural (e.g., agricultural activities, forest), it may still be urban according to most definitions that include commuter zones surrounding larger cities. The more important urban–rural divide on small islands, which is also reflected in differences in levels of poverty and development, is more likely to be between the 'mainland islands' and the smaller, more remote islands in the archipelago (Putri & Salim, 2020).

Table 1.4 (pages 24-25) shows the absolute value of all goods and services produced in a country, as measured in Gross Domestic Product (GDP) using USD. Even more so than population, this variable reveals the vast differences in the size of the islands. At almost 5 billion USD, Japan's economy is more than 100,000 times the size of Tuvalu's economy. This is yet another reminder that all islands are unique and, as such, conceptualizing 'small islands' as a homogenous group is misleading. That said, GDP per capita does standardize some of the most significant differences in the economic structure of these islands and is more meaningful to the everyday lives of residents. Here, per capita production in countries such as Iceland, Ireland, Singapore, and New Zealand is comparable to the Japanese economy. Although the GDP per capita in Nauru is comparable to values in other Pacific Island countries, this masks the unfortunate history of changes in GDP per capita on this island nation. At one point in the 1970s and early 1980s, thanks to the mining and export of phosphates, Nauru had one of the highest GDPs per capita in the world (Gowdy & McDaniel, 1999; Thomas, 2013). The Nauru Trust Fund was established by Nauru's government to build a capital reserve that could be invested in other initiatives to diversify the economy after the natural resource was gone. Unfortunately, as a result of poor investment decisions and corruption, the Trust was depleted to almost nothing, leaving the country with little to show for their former resource other than a scarred landscape (Connell, 2006; Gowdy & McDaniel, 1999).

AFP photo

In the 1970s and early 1980s, thanks to the mining and export of phosphates, the island of Nauru had one of the highest GDPs per capita in the world. The Nauru Trust Fund was established by Nauru's government to build a capital reserve that could be invested in other initiatives to diversify the economy after the natural resource was gone. Unfortunately, as a result of poor investment decisions and corruption, the Trust was depleted, leaving the country with little to show for their former resource other than a scarred landscape.

TABLE 1.4: Gross Domestic Product (GDP) and Change in GDP; Per Capita GDP and Change in GDP/capita, 2020

Continent	Island Country	GDP 2020 in millions of USD	Growth Rate of GDP % 2019-2020	GDP per capita 2020 in USD	Growth Rate of GDP per capita % 2019-2020
Asia	Japan	4,975,000	-4.7	39,539	-5.5
	Singapore	3,399,980	-5	59,798	-5.1
	Indonesia	1,058,000	-2.1	3,870	-3.1
	Timor-Leste	1,821	-3	1,381	-10.456
	Brunei Darussalam	12,016	1.2	27,466	0.2
	Philippines	361,489	-9.6	3,299	-10.8
	Sri Lanka	80,707	-3.6	3,682	-4.1
	Maldives	4,030	-3.4	7,456	-33.2
	Bahrain	38,475	-5.8	23,443	-9.159
Europe	Cyprus	23,804	-5.1	26,633	-6.4
	Iceland	21,718	-6.5	59,270	-8
	United Kingdom	2,708,000	-9.8	40,285	-10.3
	Ireland	425,889	5.9	85,268	4.6
	Malta	14,647	-7	27,885	-10.8
Africa	Cabo Verde	1,704	-14.8	3,064	15.7
	Madagascar	13,721	-4.2	495	-6.7
	Seychelles	1,125	-10.7	11,425	-11.5
	Mauritius	10,914	-14.9	8,623	-14.9
	Comoros	1220	4.9	1,403	2.7
	São Tomé and Príncipe	473	3.1	2,158	1.2
Oceania	New Zealand	210,886	1	41,478	-1.1
	Papua New Guinea	23,592	-3.879	2,637	-5.7
	Solomon Islands	1,551	-4.3	2,258	-6.7
	Vanuatu	855	-9.2	2,783	-11.4
	Fiji	4,376	-19	4,882	-19.6
	Tonga	512 (2019)	0.734 (2018-19)	4,903 (2019)	-0.5 (2018-19)
	Samoa	807	-2.7	4,067	-3.4
	Nauru	118.22 (2019)	0 (2018-19)	10,983	0.8 (2018-2019)
	Micronesia, Fed. Sts.	408 (2019)	1.2 (2018-19)	3,585 (2019)	0.2 (2018-2019)
	Marshall Islands	239 (2019)	6.529 (2018-19)	4,073 (2019)	5.842 (2018-19)

Continent	Island Country	GDP 2020 in millions of USD	Growth Rate of GDP % 2019-2020	GDP per capita 2020 in USD	Growth Rate of GDP per capita % 2019-2020
	Kiribati	200	2.5	1,671	1
	Tuvalu	49	4.4	4,143	3.2
	Palau	268 (2019)	-4.247 (2018-19)	14,908 (2019)	-4.7 (2018-19)
	Cook Islands	300 (2016 CIA)	–	16,700 (2016 CIA)	–
	Niue	–	–	–	–
Caribbean/	Cuba	103,131 (2019)	-0.217 (2018-19)	9,100 (2019)	-0.167 (2018-19)
Americas	Haiti	13,418	-3.3	1,177	-4.6
	Dominican Republic	78,845	-6.7	7,268	-7.7
	Jamaica	13,812	-10.2	4,665	-10.6
	Bahamas, The	11,250	-16.3	28,608	-17.1
	St. Kitts and Nevis	927	-10.7	17,436	-11.3
	Antigua and Barbuda	1,415	-16	14,450	-16.7
	St.Vincent and the Grenadines	810	-2.7	7,298	-3
	St. Lucia	1,703	-20.2	9,276	-20.6
	Grenada	1,089	-11.2	9,680	-11.6
	Barbados	4,365	-17.6	15,191	-17.7
	Trinidad and Tobago	21,530	-7.8	15,384	-8.1
	Dominica	470	-16.7	6,527	-16.9

One of the features that differentiates this table from previous versions is the change in growth of GDP from 2019 to 2020. Primarily as a function of the COVID-19 pandemic, almost every country has experienced a decline in their GDP. Although this is widespread, it is especially apparent in those islands that were most dependent on tourism, such as Fiji (-19%), St. Lucia (-20.2%), and Barbados (-17.6%). The Bahamas has suffered two extreme events in a row that continue to adversely impact their tourism economy: the devastation brought about by Hurricane Dorian in 2019 and the COVID-19 pandemic which began in 2020 (Shultz et al., 2020).

TABLE 1.5: Gross National Income (GNI) per Capita, 2019 and 2020 in International $

Continent	Island Country	2019	2020
Asia	Japan	44,780	42,550
	Singapore	92,020	86,480
	Indonesia	11,930	11,750
	Timor-Leste	4,730	4,490
	Brunei Darussalam	66,410	66,460 (2019)
	Philippines	10,200	9,040
	Sri Lanka	13,230	12,870
	Maldives	17,880	12,840
	Bahrain	44,140	44,330 (2019)
Europe	Cyprus	39,830	36,840
	Iceland	61,170	53,590
	United Kingdom	48,040	44,260
	Ireland	68,050	70,850
	Malta	41,690	38,800
Africa	Cabo Verde	7,310	6,230
	Madagascar	1,660	1,540
	Seychelles	29,300	24,310
	Mauritius	26,410	22,390
	Comoros	3,220	3,330
	São Tomé and Príncipe	4,090	4,260
Oceania	New Zealand	42,710	42,800
	Papua New Guinea	4,470	4,240
	Solomon Islands	2,350	2,680
	Vanuatu	3,310	2,880
	Fiji	13,260	10,910
	Tonga	6,510	6,980 (2019)
	Samoa	6,490	6,480 (2019)
	Nauru	17,790	20,770 (2019)
	Micronesia, Fed. Sts.	3,640	4,100 (2019)
	Marshall Islands	5,090 (2018)	5,130 (2019)
	Kiribati	4,650	4,250

Continent	Island Country	2019	2020
	Tuvalu	6,170	6,430
	Palau	19,500 (2018)	19,530 (2019)
	Cook Islands	N/A	N/A
	Niue	N/A	N/A
Caribbean/	Cuba	N/A	N/A
Americas	Haiti	1,790	2,930
	Dominican Republic	18,280	17,060
	Jamaica	9,770	8,850
	Bahamas, The	35,760	31,200
	St. Kitts and Nevis	25,920	24,190
	Antigua and Barbuda	21,500	18,610
	St. Vincent and the Grenadines	12,880	12,810
	St. Lucia	15,140	12,200
	Grenada	16,250	14,370
	Barbados	15,730	13,010
	Trinidad and Tobago	26,950	24,800
	Dominica	12,460	10,740

The impact of the COVID-19 pandemic carries over to Table 1.5, where almost every island country listed experienced a decline in Gross National Income (GNI) per capita between 2019 and 2020. The significance of this event is apparent in the values provided for the islands of Oceania. Among the six islands where 2020 data were not available (hence the comparison is between 2018 and 2019 incomes), five experienced growth — albeit modest at most. Seven islands reported 2020 GNI data and, therefore, incorporated the start of the COVID-19 pandemic. Four of these seven islands experienced per capita GNI decline between 2019 and 2020. New Zealand is a particularly interesting case. The nation's modest growth in income per capita over this period is partly a function of stability of domestic demand, the continued demand for export products, and the ability of the country to rebound more quickly by shielding itself from the public health impacts facing many other nations (Aghion et al., 2021; Parker, 2021).

TABLE 1.6: **Unemployment Rates, 2016–2020**

Continent	Island Country	Unemployment Rate (%), 2016	Unemployment Rate (%), 2020	Change in Unemployment Rate (%), 2016-2020
Asia	Japan	3.2	3.0	-6.3
	Singapore	2.1	5.2	147.6
	Indonesia	5.6	4.1	-26.8
	Timor-Leste	4.4	5.1	15.9
	Philippines	5.5	3.4	-38.1
	Sri Lanka	4.5	4.8	6.7
	Maldives	6.1	7.2	18.0
	Bahrain	4.1 (2014)	4.1	0
Europe	Cyprus	11.8	7.2	-39.0
	Iceland	2.7	5.0	85.2
	United Kingdom	4.8	4.3	-10.4
	Ireland	8	5.9	-26.3
	Malta	4.8	4.1	-14.6
Africa	Cabo Verde	15	12.1	-19.3
	Madagascar	1.8	1.9	5.6
	Seychelles	3.96	4.3	8.6
	Mauritius	6.8	7.1	4.4
	Comoros	8	8.4	5
	São Tomé and Príncipe	13.4	13.9	3.7
Oceania	New Zealand	5.1	4.6	-9.8
	Papua New Guinea	2.5	2.7	8.0
	Solomon Islands	0.7	0.8	14.3
	Vanuatu	1.8	2.0	11.1
	Fiji	4.3	4.8	11.6
	Tonga	2.8	4.4	57.1
	Samoa	8.6	8.9	3.5
	Cook Islands	6.3 (2011)	8.2 (2011)	–
	Niue	12 (2001)	1.0 (2017)	–
	Nauru	22.96 (2011)	13.28 (2013 est.)	–
	Micronesia, Fed. Sts.	–	16.2% (2010 est.)	–
	Marshall Islands	–	6.43 (2019)	–
	Kiribati	–	8.6 (2019)	–

Continent	Island Country	Unemployment Rate (%), 2016	Unemployment Rate (%), 2020	Change in Unemployment Rate (%), 2016-2020
	Tuvalu	–	8.49 (2016)	–
	Palau	–	–	–
Caribbean/	Cuba	2.5	3.9	56.0
Americas	Haiti	40.6	14.5	-64.3
	Dominican Republic	13.8	8.9	-35.5
	Jamaica	13.8	8.4	-39.1
	Bahamas, The	12.7	14.4	13.4
	St. Kitts and Nevis	4.5 (1997)	5.1 (2005)	13.3
	Antigua and Barbuda	11 (2014)	8.7 (2018)	-21.0
	St. Vincent and the Grenadines	19.1	20.3	6.3
	St. Lucia	19.9	17.1	-14.1
	Grenada	33.5 (2013)	20.3	-39.4
	Barbados	11	12.8	16.4
	Trinidad and Tobago	4	6.7	67.5
	Dominica	23 (2014)	11.1 (2016)	–

The impact of the COVID-19 pandemic on unemployment rates has been more mixed. Negative values in Table 1.6's 'Change in Unemployment Rate' column suggest an improvement in this aspect of the economy, with a smaller proportion of the labour force being listed as unemployed. This is the case for several developed states (e.g., Japan, the UK, and Ireland) as well as several Small Island Developing States or SIDS (e.g., Indonesia, Philippines, Haiti, and the Dominican Republic). A more enduring feature that is reflected in this table is the structural divide in overall unemployment rates among developed 'small island states' (SIS) and SIDS. The 2020 unemployment rates among SIS are almost always less than 10%, while many Caribbean SIDS have 2020 unemployment values approaching 20% of their labour forces, with even higher rates among youth — trends that were apparent prior to the COVID-19 pandemic (Craigwell & Wright, 2012; Parra-Torado, 2014).

TABLE 1.7: Human Development Index 2019 and 2016, and Change in HDI

Island Country	2019 HDI	2016 HDI	Change in HDI Value 2016-2019 (%)
Ireland	0.955	0.943	1.27
Iceland	0.949	0.941	0.85
Singapore	0.938	0.935	0.32
United Kingdom	0.932	0.924	0.87
New Zealand	0.931	0.924	0.76
Japan	0.919	0.912	0.77
Malta	0.895	0.885	1.13
Cyprus	0.887	0.873	1.60
Bahrain	0.852	0.853	-0.12
Brunei Darussalam	0.838	0.839	-0.12
Palau	0.826	0.822	0.49
Barbados	0.814	0.811	0.37
Bahamas,The	0.814	0.751	0.49
Mauritius	0.804	0.794	1.26
Seychelles	0.796	0.787	1.14
Trinidad and Tobago	0.796	0.792	0.51
Cuba	0.783	0.773	1.29
Sri Lanka	0.782	0.773	1.16
Grenada	0.779	0.771	1.04
St. Kitts and Nevis	0.779	0.771	1.04
Antigua and Barbuda	0.778	0.765	1.70
St. Lucia	0.759	0.752	0.93
Dominican Republic	0.756	0.743	1.75
Fiji	0.743	0.738	0.68
Dominica	0.742	0.740	0.27
Maldives	0.740	0.728	1.65
St. Vincent and the Grenadines	0.738	0.734	0.55
Jamaica	0.734	0.731	0.41
Tonga	0.725	0.722	0.42
Philippines	0.718	0.704	1.99
Indonesia	0.718	0.703	2.13
Samoa	0.715	0.710	0.70
Marshall Islands	0.704	–	–
Cabo Verde	0.665	0.657	1.22
Kiribati	0.630	0.622	1.29
São Tomé and Príncipe	0.625	0.608	2.80
Micronesia, Fed. States	0.620	0.614	0.98

Island Country	2019 HDI	2016 HDI	Change in HDI Value 2016-2019 (%)
Vanuatu	0.609	0.598	1.84
Timor-Leste	0.606	0.598	1.34
Solomon Islands	0.567	0.561	1.07
Papua New Guinea	0.555	0.549	1.09
Comoros	0.554	0.547	1.28
Madagascar	0.528	0.523	0.96
Haiti	0.510	0.5	2.00

The Human Development Index (HDI) is a relatively simple composite indicator of development that integrates economic, educational, and health indicators. The colours on Table 1.7 represent the four broad categories of the index, with green being Very High (>0.800), red being High (between 0.799 and 0.700), blue being Medium (0.699 – 0.550), and brown being Low (<0.550). Islands have often fared relatively well according to this indicator. Although the 2020 HDI values were not available at the time of writing, in all but two of the 44 islands, the HDI improved between 2016 and 2019. Moreover, the higher positive changes took place in the Low, Medium, and High groups of islands. The relatively strong HDI performance of islands is consistent with their world ranking on many of these broader indices. For example, according to the *World Happiness Report*, six of the 25 'happiest' countries in 2021 were islands (Helliwell et al., 2021). The *World Happiness Report* is a composite of six variables, including GDP per capita, social support, healthy life expectancy, freedom to make life choices, generosity of population, and perceptions of corruption (Helliwell et al., 2021). Similarly, using the New Economics Foundation's Happy Planet Index —a combination of life expectancy, wellbeing, and the jurisdiction's ecological footprint — Vanuatu ranked second in the world in 2019 (Patrick et al., 2019; Wellbeing Economy Alliance, 2019).

There is a strong relationship between the HDI and measures of subjective well-being (SWB) although, as might be expected, the Human Development Index is more closely linked to cognitive measures while the SWB indicators are more closely linked to affective dimensions (Yin et al., 2021). Given that one of the themes of this volume is on the Sustainable Development Goals, it is noteworthy that there is a strong positive correlation between how well a country is meeting its SDG goals and measures of SWB in those countries (De Neve & Sachs, 2020). This relationship implies that "economic activity is more important for well-being at lowers [*sic*] levels of economic development" (De Neve & Sachs, 2020, p. 115).

Using preliminary data, for the first time since 1990, the overall HDI of all countries combined declined, primarily as a function of the COVID-19 pandemic (United Nations Conference on Trade and Development, 2021). This should not come as a surprise, given that two of the three components of the HDI — average lifespan and GDP per capita — are directly affected by the viral disease. Moreover, there are preliminary signs that those countries that have traditionally had higher HDI values fared better in terms of the recovery of patients contracting COVID-19 (Buheji et al., 2021).

TABLE 1.8: Consumer Price Index, Compared to Base Year of 2010

Continent	Island Country	2010	2015	2020
Asia	Japan	100	104	106
	Singapore	100	113	114
	Indonesia	100	132	154
	Timor-Leste	100	143	146
	Brunei Darussalam	100	100	101
	Philippines	100	116	133
	Sri Lanka	100	131	165
	Maldives	100	132	135
	Bahrain	100	111	101
Europe	Cyprus	100	102	102
	Iceland	100	118	133
	United Kingdom	100	112	121
	Ireland	100	105	106
	Malta	100	108	114
Africa	Cabo Verde	100	109	111
	Madagascar	100	140	192
	Seychelles	100	121	130
	Mauritius	100	120	133
	Comoros	100	98	104
	São Tomé and Príncipe	100	154	185
Oceania	New Zealand	100	108	116
	Papua New Guinea	100	128	–
	Solomon Islands	100	125	137
	Vanuatu	100	107	–
	Fiji	100	116	129
	Tonga	100	110	–
	Samoa	100	108	116
	Nauru	–	–	–
	Micronesia, Fed. Sts.	–	–	–
	Marshall Islands	–	–	–
	Kiribati	–	100	101 (2019)
	Tuvalu	–	–	–
	Palau	–	–	–
	Cook Islands	–	–	–
	Niue	–	–	–
Caribbean/	Haiti	100	139	261
Americas	Dominican Republic	100	123	137
	Jamaica	100	141	171
	Bahamas, The	100	110	116
	St. Kitts and Nevis	100	106	104

Continent	Island Country	2010	2015	2020
	Antigua and Barbuda	100	110	115 (2019)
	St. Vincent and the Grenadines	100	105	111 (2019)
	St. Lucia	100	111	111
	Grenada	100	104	108 (2019)
	Barbados	100	117	134 (2019)
	Trinidad and Tobago	100	134	144
	Dominica	100	103	105 (2019)

Unlike many other economic variables, inflation, as reflected partially by the change in the Consumer Price Index (CPI) in Table 1.8, shows considerable internal variation within the 'developed' and 'developing' world groups. For example, although Japan and Ireland have experienced only 6% inflation from 2010 to 2020, other industrialized countries, including Iceland (33%) and the UK (21%), have seen much higher inflation over the same time period. While many developing countries have seen very high levels of inflation over the past decades, several of them (e.g., St. Kitts and Nevis, Grenada, and Dominica) have seen virtually no inflation over this same period. This is also not regionally specific. For example, Trinidad and Tobago's CPI increased by 44% from 2010 to 2020, while neighbouring Caribbean islands have had much lower levels of inflation. Although research on the causes of inflation on small islands is sparse, some work has been completed on the role that food price increases play in overall inflation. In an analysis of data from 1983–2018 in Fiji, Makun (2021) showed that food price inflation accounted for about 35% of overall inflation and that, other than fluctuation in exchange rates, the most significant factors explaining these increases are domestic, including per capita GDP and money supply. According to Table 1.8, another country experiencing high levels of inflation over this ten-year period is Indonesia, at 54%. As was the case in Fiji, price increases in foodstuffs have consistently led all other components of consumption (Nairobi, 2021). In the case of the Indonesian islands, per capita GDP did not affect the inflation rate. Rather, the World Food Price Index "has a significant positive effect on the Consumer Price Index" (Nairobi, 2021, p. 126). The extent of variation among the islands of the Caribbean may be a function of their degree of exposure to extreme weather events during this period. In an analysis of 15 Caribbean economies, Heinen and colleagues (2019) found that in those places experiencing unexpected flooding or hurricanes, there was a significantly larger impact on consumer prices — mostly on food but, to a lesser extent, also on housing. They also point out that a more open trade policy and better infrastructure appears to mitigate the impact of extreme weather events (Heinen et al., 2019).

It is too early to fully evaluate the impact of the COVID-19 pandemic on inflation. Although, two years into the pandemic, there are signs in many places that inflation has been increasing, especially in food and fuel, it may have had a deflationary impact on CPI in some places in the early days of the pandemic, largely because of a decrease in demand (Works, 2021). For example, Yuniarti et al. (2021) show that in Indonesia, up until July 2020 there was an inverse relationship between the number of COVID-19 cases reported and inflation, wherein the greater the number of cases, the lower the rate of inflation. It may be that more recent data and peer-reviewed literature in next year's *Annual Report on Global Islands* will

TABLE 1.9: Foreign Direct Investment, Net Current, 2020 (in million USD)

Continent	Island Country	2020 FDI Inflows	2020 FDI Outflows	Total FDI
Asia	Japan	10,254	115,703	105,449
	Singapore	90,562	32,375	-58,187
	Indonesia	18,581	4,467	-14,114
	Timor-Leste	72	694	622
	Philippines	6,542	3,525	-3,017
	Sri Lanka	434	15	-419
	Bahrain	1007	-205	-1,212
Europe	Cyprus	-3,647	-5,954	-2,307
	Iceland	-811	-276	535
	United Kingdom	19,724	-33,409	-53,133
	Ireland	33,424	-49,474	-82,898
	Malta	3,917	7,288	3,371
Africa	Cabo Verde	73	-45	-118
	Madagascar	359	102	-257
	Seychelles	122	10	-112
	Mauritius	246	26	-220
	Comoros	9	–	–
	São Tomé and Príncipe	47	1	-46
Oceania	New Zealand	4,216	880	-3,336
	Papua New Guinea	-935	114	1,049
	Solomon Islands	9	3	-6
	Vanuatu	30	2	-28
	Fiji	241	14	-227
	Tonga	-1	0	1
	Samoa	-1	5	6
	Micronesia, Fed. Sts.	–	–	–
	Marshall Islands	7	–	–
	Kiribati	0	0	0
	Tuvalu	0.1	–	–
	Palau	24	–	–
	Cook Islands	7	0	-7
Caribbean/	Haiti	30	–	–
Americas	Dominican Republic	2,644	–	–
	Jamaica	366	4	-362

Continent	Island Country	2020 FDI Inflows	2020 FDI Outflows	Total FDI
	Bahamas, The	897	157	-740
	St. Kitts and Nevis	47	-6	-53
	Antigua and Barbuda	22	10	-12
	St. Vincent and the Grenadines	73	-3	-76
	St. Lucia	15	-39	-54
	Grenada	146	0	-146
	Barbados	262	8	-254
	Trinidad and Tobago	-439	172	611
	Dominica	25	0	-25

allow us to better understand the longer-term implications of the COVID-19 pandemic on inflation. Some research suggests that, despite short term losses for farmers, a greater emphasis on local food production and sharing has already started on some Pacific islands (Ferguson et al., 2022) and in the Caribbean (Blazy et al., 2021). If these trends continue, it would bring greater food security to island residents who have often relied on imported food and food supply chains. As such, it will contribute to meeting the 'zero hunger' Sustainable Development Goal (SDG 2).

As per the discussion in last year's *Annual Report on Global Islands* (Randall, 2021b), inflows of capital or investment to a country are seen as a liability, at least in part because there may be an insufficient amount of investment capital available locally to fund development. On the other hand, high levels of investment out of the country implies that the financial sector is healthy enough to lend money elsewhere, eventually resulting in profits flowing back into those domestic financial institutions. One of the most notable changes when comparing these investment values to those in the previous version of this Report is the overall decrease in inflows and outflows for almost every country. As with the Consumer Price Index, this trend is undoubtedly a function of the COVID-19 pandemic in 2020. Ho and Gan (2021) note that health pandemics in general create adverse shocks to foreign direct investment, including on net inflows to the Asia-Pacific region. A report by the ILO Regional Office for Asia and the Pacific (2021) suggests that new inflows of Foreign Direct Investment (FDI) to Asia and the Pacific region declined by 36% from 2019 to 2020, at least partly because of increased uncertainty and supply chain disruptions during the early stages of the pandemic. As reported last year, much of the foreign investment on small islands is linked to the tourism sector. Post-pandemic development should see a rebound in this sector with a concomitant growth in foreign investment (Scarlett, 2021). There are increasing calls for island governments to be prepared for life after COVID-19 by developing a coordinated Foreign Direct Investment plan for targeted sectors, including in tourism (Becker, 2021).

TABLE 1.10: Rankings and Scores of Globalization Index, 2020

Island Country	Globalization Index				Economic Globalization	Social Globalization	Political Globalization
	Island Country Ranking	World Ranking	Score	Change in World Ranking 2019-2020			
United Kingdom	1	5	89.39	0	81.19	89.18	97.08
Ireland	2	11	85.54	6	87.81	87.30	81.52
Singapore	3	18	83.49	2	93.63	88.70	68.14
Cyprus	4	19	83.06	16	85.77	85.30	78.11
Japan	5	36	78.40	1	67.72	79.96	87.51
Malta	6	38	77.28	1	86.15	84.17	61.51
New Zealand	7	39	77.22	-1	67.44	86.65	77.56
Mauritius	8	48	72.27	2	82.65	78.38	55.78
Iceland	9	50	71.91	3	69.40	86.17	60.16
Bahrain	10	62	68.92	1	81.96	73.85	51.17
Philippines	11	74	66.91	-2	57.22	61.45	81.88
Dominican Republic	12	77	65.31	-4	51.49	73.33	71.11
Trinidad and Tobago	13	81	64.34	-2	62.00	75.29	55.73
Seychelles	14	84	63.76	7	77.62	75.46	39.48
Indonesia	15	87	63.22	5	49.66	52.41	87.60
Barbados	16	88	62.95	5	57.63	78.06	53.14
Jamaica	17	91	62.20	-14	61.40	69.33	55.87
Brunei Darussalam	18	92	62.12	-2	67.11	72.37	48.06
Cuba	19	93	62.12	1	–	48.93	78.49
Sri Lanka	20	101	59.79	1	44.13	58.19	77.00
Antigua and Barbuda	21	105	58.10	-5	61.25	81.96	33.40
Fiji	22	107	57.24	0	52.11	69.80	50.92
St. Lucia	23	110	56.35	-2	59.90	78.61	34.95
Cape Verde	24	111	56.29	1	57.75	66.68	45.66
Bahamas	25	114	55.87	4	48.68	85.02	35.39
Dominica	26	120	54.08	-9	56.80	76.35	32.12
St. Kitts and Nevis	27	130	52.72	9	55.33	81.25	25.64
Grenada	28	133	52.38	-16	56.38	71.32	31.59
Samoa	29	135	52.24	-1	53.75	72.27	33.49
Papua New Guinea	30	137	52.05	3	58.83	41.77	54.48

Island Country	Globalization Index				Economic Globalization	Social Globalization	Political Globalization
	Island Country Ranking	World Ranking	Score	Change in World Ranking 2019-2020			
Maldives	31	140	51.72	9	64.59	68.24	26.07
St. Vincent and the Grenadines	32	151	49.86	-13	50.79	73.03	28.81
Vanuatu	33	154	48.88	-6	64.03	60.94	27.10
Madagascar	34	155	48.85	-3	48.84	37.95	59.75
Tonga	35	162	47.57	-13	51.75	72.76	23.41
Kiribati	36	167	45.77	0	68.58	61.51	13.98
Marshall Islands	37	168	45.75	5	64.22	72.02	16.71
Micronesia, Fed. Sts.	38	169	45.57	-12	70.49	63.44	12.84
Timor-Leste	39	176	44.65	-14	59.68	49.52	27.04
Haiti	40	178	44.51	-9	44.11	41.45	47.95
Palau	41	180	44.35	-12	55.73	77.12	11.14
São Tomé and Príncipe	42	181	44.28	3	44.83	58.70	30.44
Solomon Islands	43	184	42.48	-6	48.02	52.31	29.49
Comoros	44	189	40.42	4	34.96	50.14	35.89

Globalization occurs in many forms. In Table 1.10, the KOF Swiss Economic Institute has once again provided their most recent scoring of jurisdictions for economic, social, and political globalization (Gygli et al., 2019). *Economic globalization* includes variables such as openness to trade, FDI, and international debt. *Social globalization* includes international tourism and students, internet bandwidth, and trade in cultural goods, while *political globalization* includes the presence of international embassies and organizations (including NGOs), and the number of international treaties. It appears that the most globalized islands, using the 2016 data (Randall, 2021b, pp. 34–35), have become even more globalized in 2020. Last year, three islands (the UK at 5th, Ireland at 17th, and Singapore at 20th) ranked in the top 20 in the world in their overall globalization scores. Using the most recent data, four islands are now in this group (the UK at 5th, Ireland at 11th, Singapore at 18th, and Cyprus at 19th). Cyprus is especially noteworthy in that it improved its world ranking by 16 positions in the past year. This may at least in part be a function of the internationalization of the education sector in Cyprus, which has "gradually become a pillar of the country's economy" (Vryonides & Pavlou, 2021).

TABLE 1.11: Global Innovation Index, 2021

Island Country	Global Innovation Index				Innovation Output Sub-Index		Innovation Input Sub-Index		Efficiency Ratio (2021)	
	Island Country Ranking	World Ranking	Score	Change in World Ranking 2020-2021	World Ranking	Score	World Ranking	Score	Island Country Score ranking	
United Kingdom	1	4	59.80	0	6	53.10	7	66.50	1	0.80
Singapore	2	8	57.8	0	13	45.50	1	70.00	9	0.65
Japan	3	13	54.50	3	14	45.20	11	63.80	6	0.71
Iceland	4	17	51.80	4	16	43.90	20	59.70	4	0.74
Ireland	5	19	50.70	-4	19	42.1	22	59.20	6	0.71
New Zealand	6	26	47.5	0	32	34.8	19	60.2	10	0.58
Malta	7	27	47.1	0	22	40.20	29	54.10	4	0.74
Cyprus	8	28	46.70	1	21	40.30	31	53.10	3	0.76
Philippines	9	51	35.30	-1	40	30.60	72	39.90	2	0.77
Mauritius	10	52	35.20	0	58	25.00	48	45.40	12	0.55
Jamaica	11	74	29.6	-2	66	21.60	82	37.70	11	0.57
Bahrain	12	78	28.80	1	99	15.3	63	42.3	16	0.36
Brunei Darussalam	13	82	28.20	-11	115	11.60	51	44.70	17	0.26
Indonesia	14	87	27.1	-2	84	17.90	87	36.20	14	0.49
Dominican Republic	15	93	25.10	-3	98	15.3	93	34.90	15	0.44
Sri Lanka	16	95	25.10	6	85	17.70	103	32.40	12	0.55
Madagascar	17	110	22.50	5	78	18.60	127	26.40	8	0.70

Innovation is a complex concept that is often treated simplistically. The World Intellectual Property Organization (2021), from which the data on Table 1.11 are drawn, defines innovation broadly as "a new or improved product or process … that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)." Their index uses 81 indicators grouped into five input and two output pillars. These pillars include aspects of the political environment, human capital, infrastructure, market and business sophistication, knowledge and technology outputs, and creative outputs (World Intellectual Property Organization, 2021). As suggested from the list, this is not merely a research- and technology-driven indicator. A nation's cultural characteristics are quite important in influencing the level of innovation in a country (Guillén & Deckert, 2021), and the higher education and training environment was the strongest causal

factor associated with innovation (de Miranda et al., 2021). Comparing the island rankings on globalization (Table 1.10) and innovation (Table 1.11) suggests that there is a high degree of complementarity or overlap between these two concepts. The seven top-ranked islands according to their overall Globalization Index also have the highest innovation scores, in roughly the same order. They are also all members of the developed, industrialized world, with high per capita incomes.

In this year's version of the *Annual Report*, migration is addressed more prominently. Table 1.12 (following pages) provides net migration values (i.e., immigration minus emigration) for the island states, using the most recent data. Some nations show massive overall growth or population decline because of migration. For example, Japan and the UK experienced net gains of more than 300,000 residents each over a one-year period, while Sri Lanka lost almost 500,000 people. As is the case with many economic indicators, the absolute numbers of migrants may not adequately reflect the significance of migration for a jurisdiction. The net migration rate (i.e., per 1,000 people) standardizes these values. Therefore, the large net migration to Japan in absolute terms still constitutes less than 1% of the nation's population, while Singapore's and Bahrain's smaller population increases may have had a much greater impact on their respective countries.

WHILE WE TEND TO THINK of migration and mobility primarily in economic terms, to do so in the case of small islands, and especially with respect to Pacific islands, would be a mistake.

The net migration rates from the smaller Pacific islands show a consistent pattern of decline across the region, in some cases representing a large portion of the countries' population (e.g., Cook Islands at -28.6%). Intra-regional mobility among residents of Pacific islands is not new — it has been one of the most important resilience mechanisms that islands have used to cope with extreme events and to strengthen trade and social relationships (Cangiano & Torre, 2020). While we tend to think of migration and mobility primarily in economic terms, to do so in the case of small islands, and especially with respect to Pacific islands, would be a mistake. In Oakes' (2019, p. 480) words, "culture, and in particular how Islanders relate to land and religion can influence decision-making, promoting or hindering mobility." The mobility decisions of islanders are complex and must be understood as part of everyday life, livelihoods, and maintaining social cohesion (Rampengan et al., 2018). Mobility also has to be understood in the context of a variety of scales. The data presented here only captures migrants who cross national borders. In fact, although it is understudied, most island mobility takes place within a country (Weir, 2020). This is especially important on archipelagos that are geographically dispersed across thousands of kilometres.

With the projected consequences of sea level rise, discussions regarding migration have taken on greater urgency. This includes use of the term 'climate refugees' in the

TABLE 1.12: Net Migration and Migration Rates, various years

Continent	Island Country	Year	Net Migration	Net Migration Rate 2021 (per 1,000 population)
Asia	Japan	2017	357,800	0.534
	Singapore	2017	135,142	4.609
	Indonesia	2017	-494,777	-0.374
	Timor-Leste	2017	-26,924	-3.84
	Brunei Darussalam	–	–	2.22
	Philippines	2017	-335,758	-0.609
	Sri Lanka	2017	-489,932	-4.27
	Maldives	2020	56,851	-0.626
	Bahrain	2015	239,000	17.489
Europe	Cyprus	2019	25,000	4.136
	Iceland	2020	2,240	1.112
	United Kingdom	2020	313,000	2.903
	Ireland	2020	28,900	3.164
	Malta	2019	–	1.903
Africa	Cabo Verde	2015	-6,709	-2.302
	Madagascar	2015	-7,500	-0.054
	Seychelles	2015	-1,000	-2.033
	Mauritius	2015	12,079 (2012)	0
	Comoros	2015	-10,000	-2.28
	São Tomé and Príncipe	2015	-8,401	-6.857
Oceania	New Zealand	2021 June	4,711	2.775
	Papua New Guinea	–	-3,999	-0.089
	Solomon Islands	–	-7,998	-2.307
	Vanuatu	2017	600	0.166
	Fiji	2017	-31,008	-5.054
	Tonga	2017	-3,999	-7.537
	Samoa	2017	-14,013	-10.194
	Palau	–	–	0.51
	Kiribati	2017	-3,999	-4.706
	Nauru	–	–	-11.05
	Micronesia, Fed. Sts.	2017	-2,999	-4.719

Continent	Island Country	Year	Net Migration	Net Migration Rate 2021 (per 1,000 population)
	Marshall Islands	–	–	-4.43
	Tuvalu	–	–	-6.46
	Cook Islands	–	–	-28.58
	Niue	–	–	N/A
Caribbean/	Haiti	2017	-175,000	-2.902
Americas	Dominican Republic	2017	-150,000	-2.715
	Jamaica	2017	-56,658	-3.824
	Bahamas, The	2017	-4,999	2.535
	St. Kitts and Nevis	–	–	1.16
	Antigua and Barbuda	2017	0	2.06
	St. Vincent and the Grenadines	2017	-1,000	-6.82
	St. Lucia	2017	0	-1.37
	Grenada	2017	-1,000	-1.777
	Barbados	2017	-397	-0.276
	Trinidad and Tobago	2017	-3,999	-0.573
	Dominica	–	–	-5.31

popular press, and real plans by some island nations (e.g., Kiribati) to purchase land elsewhere in the region for the eventual relocation of their people. Nagabhatla and colleagues (2020, p. 12) describe the attitude of most of the world community to the plight of SIDS to climate change as "myopic and directed towards economic development rather than building resilience." Increasingly, researchers are advocating for a transformative mobility where cultural identity, human rights, adaptation, and human development goals are all part of the mobility discussion (Farbotko et al., 2018).

Trade as a share of GDP is a rough indicator of the openness of an island and its economy. The significance of trade can depend on many factors, including the degree of isolation, the island's economic structure, and the absolute size of its economy. As Table 1.13 shows (following pages), small island states such as Singapore, Malta, and Ireland are highly dependent on trade in both goods and services. At the same time, a large, developed economy like Japan's may engage in a significant amount of trade in absolute terms, but this international exchange still represents a relatively small share of its total GDP. Islands that have not developed a significant export-oriented industrial base relative to domestic production and consumption (e.g., Indonesia, Haiti, and Sri

TABLE 1.13: Trade as Percentge of GDP in 2010, 2020

Continent	Island Country	2010	2020
Asia	Japan	28.6	51.6
	Singapore	369.7	321.0
	Indonesia	46.7	33.0
	Timor Leste	150.9	163.0
	Brunei Darussalam	95.4	110.0
	Philippines	71.4	58.0
	Sri Lanka	46.4	40.0
	Maldives	143.0	117.9
	Bahrain	120.5	142.0 (2019)
Europe	Cyprus	109.1	142.0
	Iceland	94.1	69.0
	United Kingdom	58.6	55.0
	Ireland	189.4	240.0
	Malta	307.4	272.0
Africa	Cabo Verde	94.4	85.0
	Madagascar	57.9	54.0
	Seychelles	201.9	189.0
	Mauritius	113.5	79.0
	Comoros	39.6	42.0 (2019)
	São Tomé and Príncipe	–	–
Oceania	New Zealand	58.2	44.3
	Papua New Guinea	–	–
	Solomon Islands	130.5	64.0
	Vanuatu	99.4	70.0
	Fiji	121.7	72.0
	Tonga	72.7	81.2
	Samoa	80.6	83.0
	Palau	127.1	125.0 (2018)
	Kiribati	91.5	98.0 (2018)
	Nauru	99.0	99.0 (2019)
	Micronesia, Fed. Sts.	–	88.6
	Marshall Islands	–	104.5
	Tuvalu	–	–
	Cook Islands	–	–

Continent	Island Country	2010	2020
	Niue	–	–
Caribbean/	Haiti	–	41.0
Americas	Dominican Republic	56.0	44.0
	Jamaica	80.9	90.0
	Bahamas, The	78.7	49.9
	St. Kitts and Nevis	76.2	–
	Antigua and Barbuda	104.7	89.0
	St. Vincent and the Grenadines	84.0	85.0 (2012)
	St. Lucia	99.8	–
	Grenada	73.1	77.0
	Barbados	95.9	84.0 (2019)
	Trinidad and Tobago	85.8	–
	Dominica	88.1	110.0

Lanka) would have a low share of trade to GDP. If the 'import' of tourists (e.g., Maldives) or the export of raw materials (e.g., fish products in the Seychelles) is important, trade may also be a more important component of their economies. There is no clear pattern in the change in the importance of trade to island economies between 2010 and 2020. In places such as Cyprus and Ireland, trade has become more important, while other islands (e.g., Mauritius, Solomon Islands) have become more insular. Extreme events, including hurricanes and rapid declines in the number of tourists, may also produce significant year-to-year fluctuations in trade on some of the smaller islands.

Although it may not yet be apparent in the 2020 data presented here, international trade has been curtailed by the COVID-19 pandemic. Global trade in merchandise fell by 11% from April to September of 2020 compared to the same period the previous year, while trade in commercial services was down by 20% (Me & Fu, 2021). It is also clear that, at least in the first year of the pandemic, local food production practices and food sharing on many islands increased to replace supply line disruptions. Based on more than 600 household interviews on six Pacific islands, Ferguson et al. (2022) found that those countries that were more reliant on food imports were twice as likely to report food insecurity than those that relied on more local sources of food. At the other extreme, many Caribbean islands are so enmeshed in the global trading system — as "sites of extraction or leisure" (Hinds, 2022, p. 45) — that they find themselves sinking deeper into financial crises. Despite the obvious tragic consequences of the COVID-19 pandemic, findings such as these suggest that opportunities exist for island governments to rethink their economic, trade, and social policies so that they are more resilient to future extreme events.

SECTION 2: SUBNATIONAL ISLAND JURISDICTIONS

The Islands Economic Cooperation Forum has long recognized the importance of subnational island jurisdictions (SNIJs), and this is reflected in the presence of these islands in these Annual Reports. Over the past five years, the research and literature on these semi-autonomous or non-sovereign places has expanded significantly (see, for example, Baldacchino, 2020; Ferdinand et al., 2020; Randall, 2021a; Randall & Boersma, 2020; Rojer, 2021). Although there are hundreds, if not thousands, of islands that could be referred to as 'subnational', it is exceedingly difficult to access accurate, recent, comparative data on more than a handful of these islands. This is partly a function of their relative invisibility in the international arena. Development statistics for these semi-autonomous states, territories, overseas dependencies, etc., are subsumed within national-level reporting systems. The fact that there are only six tables in this chapter devoted to SNIJs, compared to 13 for island states, is a reflection of this challenge.

TABLE 1.14: Most Recent Population Characteristics (Subnational Islands)

	Year	Population	Population Growth Rate (%) over Previous Year	Year	Population	Percent Change (%) in Population Between Two Dates Indicated
Bali, Indonesia	2020	4,414,400	1.17	2014	4,225,000	4.5
Gotland, Sweden	2020	60,124	0.93	2016	58,003	3.7
Greenland, Denmark	2020	56,225	0.16	2016	56,190	0.1
Hainan Island, China	2020	10,123,400	1.72	2016	9,171,300	10.4
Hawai'i, USA	2020	1,455,271	-0.33	2016	1,428,557	1.9
Java, Indonesia	2020	147,795,436	0.76 (2019)	2015	141,300,000	4.6
Jeju, South Korea	2020	695,519	0.07	2016	661,190	4.9
Luzon, Philippines	2021	64,260,312	1.63	2015	53,336,134	20.4
Okinawa, Japan	2021	1,435,630	0.51	2015	1,434,138	0.1
Phuket, Thailand	2021	437,963	1.33	2017	4,119,840	6.3
Prince Edward Island, Canada	2020	163,418	1.90	2016	148,649	9.9
Taiwan, China	2021	23,876,506	0.16	2016	23,556,706	1.4
Tasmania, Australia	2021	542,000	0.60	2016	517,588	4.7

Prince Edward Island has experienced 9% growth in population in the past five years, a response to an aggressive international strategy targeting economic migrants who bring skills and investment funds, but also including refugees and family members of recent immigrants. IRSA PEI photo

Table 1.14, at left, shows that population growth in the 13 subnational islands that are part of this project varies along the same developed–developing divide as is the case for the island states, with relatively high growth in the developing islands and population stagnation in the developed islands. One exception to this is Canada's Prince Edward Island (PEI), which experienced 9% growth in the past five years. PEI's population growth, currently the strongest among the Canadian provinces, can be seen as a response to an aggressive international immigration strategy, primarily targeting economic migrants who bring skills and investment funds, but also including refugees and family members of recent immigrants (PEI Statistics Bureau, 2021). Although the province has been quite successful in attracting international immigrants, it still has challenges retaining immigrants once they have satisfied provincial residency requirements. It is not uncommon for international immigrants to move elsewhere in Canada, particularly to larger urban centres where there may be better employment and educational opportunities and access to similar ethnic communities (Gorman-Asal, 2020).

TABLE 1.15: **Birth and Death Rates, various years (Subnational Islands)**

	Year	Crude Birth X / 1,000 people	Crude Death X / 1,000 people
Bali, Indonesia	2017	18.42	7.17 (2015)
Gotland, Sweden	2018	11.00	9.00
Greenland, Denmark	2019	15.10	9.80
Hainan Island, China	2019	12.87	6.11
Hawai'i, USA	2019	11.80	5.73
Java, Indonesia	2020	17.40	6.60
Jeju, South Korea	2013	9.10	5.9 (2019)
Luzon, Philippines	2018	16.30	5.5 (2017)
Okinawa, Japan	2019	–	12.50
Phuket, Thailand	2016	17.38	5.54
Prince Edward Island, Canada	2020	8.01	8.57
Taiwan, China	2021	8.40	7.89
Tasmania, Australia	2019	10.92	8.71

As was the case in last year's *Annual Report*, Prince Edward Island is also the only SNIJ in this group where the death rate exceeds the birth rate (see Table 1.15). Even on those islands with very low overall population growth, such as Phuket (Thailand), Greenland (Denmark), and Hainan (China), natural population growth (i.e., where the birth rate exceeds the death rate) is positive.

Any discussion of the factors that influence population change, either from migration or natural change, also raises the issue of control over development and policy. This is especially important for semi-autonomous islands, where there is often a division of responsibilities between the island government and the central metropole government for developing policy and providing services. For example, Korea's Jeju Island has long experienced a tension between the role of the island government and the central Korean government. A long history of central government control has led the island to be developed and marketed internationally as a tourist resort. Despite now being referred to as a "free international city" (Kim, 2020, p. 170), Jeju has lost much of its governance independence to the national government and external investors.

TABLE 1.16: Life Expectancy (Subnational Islands)

	Year	Total Life Expectancy	2017 Total Life Expectancy	Change in Life Expectancy (%) Between the Two Dates Indicated
Bali, Indonesia	2019	75.5	–	–
Gotland, Sweden	2019	82.5	81.5	1.2
Greenland, Denmark	2021	73.8	72.7	1.4
Hainan Island, China	2019	77.1	76.6	0.6
Hawai'i, USA	2019	81.4	81.4	0
Java, Indonesia	2019	72.3	–	–
Jeju, South Korea	2017	82.5	–	–
Luzon, Philippines	2019	71.6	72.1	-0.7
Okinawa, Japan	2015	83.9	83.2	-0.8
Phuket, Thailand	2019	77	75	2.6
Prince Edward Island, Canada	2019	81.6	80.9	0.9
Taiwan, China	2021	81	80.3	0.9
Tasmania, Australia	2019	81.6	80.7	1.1

Globally, average life expectancies improved during most of the 20th century (Riley, 2005). Table 1.16 shows that this trend applied to most of the subnational islands listed here in the latter part of the 2010s. However, even prior to the COVID-19 pandemic, average life expectancies globally were levelling off. For example, from 2014 to 2016, life expectancies for both genders declined in 11 of 18 high-income countries, and this continued in 2017 in the USA and the UK (Ho & Hendi, 2018). Comparing actual to expected life expectancies in 2020 (i.e., the first year of the COVID-19 pandemic), Islam et al. (2021) found that 31 of 37 upper-middle- and high-income countries had lower life expectancies. Similar results (27 of 29 countries) were documented by Aburto and colleagues (2021, p. 1), who went on to say that the magnitude of mortality increases had not been seen "since World War II in Western Europe or the breakup of the Soviet Union in Eastern Europe."

Most COVID-19 public health outcomes data are at the national and international scale. As noted earlier, this often masks the variation at the subnational level. However, recent research on the impacts of the first wave of the COVID-19 pandemic is emerging. For example, some regions in Spain saw life expectancy decrease by more than two years while other regions had almost no change (Trias-Llimós et al., 2020). Similarly, in Brazil, the more isolated state of Amazonas saw a decline in life expectancy of almost 3.5 years, while other Brazilian states saw little change (Castro, 2021). A clearer picture of the public health impact of the COVID-19 pandemic on the SNIJs represented here will emerge next year.

TABLE 1.17: **Urban Share of Population (Subnational Islands)**

	Year	Urban %	Urban % (2010)	Change in Urban Share of Population (%) Between Two Dates Indicated
Bali, Indonesia	2020	70.2	60.2	16.6
Gotland, Sweden	2020	63.1	–	–
Greenland, Denmark	2020	87.3	84.4	3.4
Hainan Island, China	2020	61.0	49.2	24.0
Hawai'i, USA	2014	91.9	91.9	0.0
Java, Indonesia	2020	57.0	49.9	14.2
Jeju, South Korea	2020	100.0	100.0	0.0
Luzon, Philippines	2020	47.4	45.3	4.6
Okinawa, Japan	2020	100.0	–	–
Phuket, Thailand	2020	51.4	48.4	6.2
Prince Edward Island, Canada	2016	40.0	44.8	-10.7
Taiwan, China	2020	78.9	74.4	6.0
Tasmania, Australia	2016	47.0	–	–

The change in the rate of urbanization varies significantly across these semi-autonomous islands, as seen in Table 1.17. In those places that still had a substantial rural population in 2010 (e.g., Hainan, Java), the rate of urbanization was greater than in those smaller islands that have already experienced this urban transition (e.g., Hawai'i, Jeju). For the former group, some of the challenges associated with rapid urbanization for both city and country populations, including gaps in household income and provision of services, will continue until some stability is achieved (Chen, 2018). Those islands that are already highly urbanized face their own development problems. For example, the pressures of urbanization and tourism on Oahu and several other Hawaiian islands has led to greater environmental disturbance, social conflict, and economic inequality (Aliasut, 2019). Assumptions about the development benefits and costs of urbanization are increasingly being questioned. This is especially the case on small islands with limited resources to accommodate urban growth. Cocklin and Keen (2000) note that the fragile biophysical environments, limited land resources, and shortage of basic resources on Pacific islands make them especially vulnerable to the problems associated with rapid urbanization.

TABLE 1.18: **Labour Force Characteristics, various years (Subnational Islands)**

	Year	Labour Force	Unemployment Rate %
Bali, Indonesia	2018	3,243,320	5.6
Gotland, Sweden	2019	28,952	7.1
Greenland, Denmark	2015	26,840	9.1
Hainan Island, China	2020	5,410,000	2.3 (2019)
Hawai'i, USA	2021	605,900	6.3
Java, Indonesia	2018	3,106,118	4.0
Jeju, South Korea	2020	458,680	2.1 (2019)
Luzon, Philippines	2021	41,100,000	8.8
Okinawa, Japan	2020	629,394 (2015)	3.3 (2020)
Phuket, Thailand	2013	167,883	2.3
Prince Edward Island, Canada	2021	84,600	10.4
Taiwan, China	2021	11,902,000	3.8
Tasmania, Australia	2021	275,000	5.1

Comparing the labour forces of the 13 subnational islands listed in Table 1.18 shows the heterogeneity of islands once again. For example, Luzon, Philippines, is the fourth most populated island in the world, with a labour force that is more than 1,500 times that of Greenland. Although other characteristics, such as the unemployment rate, may suggest they are comparable, the nature of economic and social life on these two islands are considerably different. Everyday economic life on the cold-water island of Greenland is shaped by fisheries, hunting, and income transfers from Denmark (Arnaut, 2022; Rasmussen, 2000). Meanwhile, the large, tropical island of Luzon can hardly be considered a SNIJ in the conventional definition of the term. Although it is still largely rural in population and economic structure, it includes the metropolis of Manila, which produces approximately 55% of the country's GDP (Balisacan et al., 2009). From the

TABLE 1.19: **Gross Domestic Product, various years (Subnational Islands)**

	Year	Gross Domestic Product (GDP) in USD	GDP per capita in USD
Bali, Indonesia	2019	5,839,000,000	2,650
Gotland, Sweden	2016	2,371,259,730	40,853
Greenland, Denmark	2018	3,051,626,390	54,471
Hainan Island, China	2020	86,545,673,335	8,624
Hawai'i, USA	2020	75,860,000,000	58,540
Java, Indonesia	2016	9,360,000,000	3,620
Jeju, South Korea	2016	19,335,000,000	30,792 (2019)
Luzon, Philippines	–	–	–
Okinawa, Japan	2016	35,181,177,556	18,498
Phuket, Thailand	2016	576,818,694	1,076
Prince Edward Island, Canada	2020	5,923,364,234	36,711
Taiwan, China	2019	668,500,000,000	28,306
Tasmania, Australia	2020	32,840,000,000	61,011

perspective of per capita GDP (Table 1.19), the 'wealthiest' island is Tasmania, Australia. While the value of average production per person among the other developed SNIJs on this list have remained similar to those reported in last year's *Annual Report*, it has continued to grow in Tasmania. Much of this growth can be attributed to the agriculture, forestry, and fishing sectors (Tasmanian Government, 2021). As with many of the other statistics provided in this chapter, we may not be seeing a current picture of the economy and development of islands in the age of COVID-19. For example, despite apparent growth in GDP per capita in Tasmania, the state lost more jobs than any other Australian state or territory (Minshull & Browne, 2020).

Despite the tragic public health, economic, and social consequences of the COVID-19 pandemic, we look forward to seeing how the initial impacts reported here evolve over the course of the next year.

SOURCES AND NOTES FOR TABLES

The values provided in these cells are accurate as of the time they were submitted for publication. The specific values in the Tables may change as data are updated and/or as currencies fluctuate.

Table 1.1:
Population and Population Growth Rates from the CIA World Factbook (http://www.cia.gov/library/publications/the-world-factbook); Population Density from the World Bank (http://data.worldbank.org/indicator/en.PoP.dnst).

Table 1.2:
From the CIA World Factbook, various links (http://www.cia.gov/library/publications/the-world-factbook).
Niue data is from Niue Vital Statistics 2019
(https://niue.prism.spc.int/social/vital-statistics/niue-vital-statistics-2019).

Table 1.3:
2021 urbanization rates are from the CIA World Factbook (http://www.cia.gov/library/publications/the-world-factbook);
2020 urbanization rate data are from the World Bank (https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS).

Table 1.4:
From the World Bank (http://data.worldbank.org).

Table 1.5:
From the World Bank (http://data.worldbank.org).

Table 1.6:
Unemployment rates are from the World Bank (https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS).
Note: Values listed may not necessarily correspond to the data from these sources because the latter are updated when new information is available.
Cook Islands: Ministry of Finance and Economic Management Government of the Cook Islands (http://www.mfem.gov.ck/statistics/economic-statistics/labour-market-indicators).
Cuba: Trading Economics (https://tradingeconomics.com/cuba/unemployment-rate).
St. Kitts and Nevis: United Nations
(https://data.un.org/CountryProfile.aspx/_Images/CountryProfile.aspx?crName=Saint%20Kitts%20and%20Nevis).

Table 1.7:
From the United Nations Development Program (UNDP; http://www.hdr.undp.org/en/content/latest-human-development-index-ranking).

Table 1.8:
From the World Bank (https://data.worldbank.org/indicator/FP.CPI.TOTL).

Table 1.9:
From the United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2021*
(https://unctad.org/webflyer/world-investment-report-2021).

Table 1.10:
From the KOF Swiss Economic Institute (http://globalization.kof.ethz.ch).

Table 1.11:
Global Innovation Index, Innovation Input, and Output Sub-Index Efficiency Ratios are from
http://www.globalinnovationindex.org/analysis-indicator. The Efficiency Ratio (2021) is calculated by dividing the Output Sub-Index value by the Input Sub-Index value.

Table 1.12:
Net Migration data are mainly from the World Bank Net Migration Indicator (https://data.worldbank.org/indicator/SM.POP.NETM).
United Kingdom net migration is from the UK Office for National Statistics (https://www.statice.is/statistics/population/migration/external-migration).
Net Migration Rates 2021 (per 1,000 population) are from various sources, as follows:

- Japan: OECD iLibrary (https://www.oecd-ilibrary.org/sites/b140958b-en/index.html?itemId=/content/component/b140958ben).

continued on following page

- Singapore and Indonesia: Statista (https://www.statista.com/statistics/698035/singapore-number-of-immigrants).
- Timor-Leste, Brunei Darussalam, Bahrain, United Kingdom, Cabo Verde, Madagascar, Seychelles, Palau, Nauru, Tuvalu, Cook Islands, St. Kitts and Nevis, and Dominica: CIA World Factbook (https://www.cia.gov/the-world-factbook).
- Philippines, Sri Lanka, Cyprus, Mauritius, Comoros, Papua New Guinea, Solomon Islands, and The Bahamas: Macrotrends (https://www.macrotrends.net/countries/PHL/philippines/net-migration).
- Maldives: Global Detention Project (https://www.globaldetentionproject.org/countries/asia-pacific/maldives).
- Iceland: Statistics Iceland (https://www.statice.is/statistics/population/migration/external-migration).
- Ireland: Central Statistics Office (https://www.cso.ie/en/releasesandpublications/er/pme/populationandmigrationestimate sapril2020).
- Malta: Euro Stat (https://ec.europa.eu/eurostat/databrowser/view/TPS00176__custom_1738861/default/table?lang=en).
- São Tomé and Príncipe: Knoema (https://knoema.com/atlas/Sao-Tome-and-Principe/topics/Demographics/Population/Net-migration-rate).
- New Zealand: Stats NZ (https://www.stats.govt.nz/information-releases/international-migration-june-2021).
- Vanuatu, Fiji, Tonga, Samoa, Kiribati, Federated States of Micronesia, Haiti, Dominican Republic, Jamaica, Antigua and Barbuda, St. Vincent and the Grenadines, St. Lucia, Grenada, Barbados, and Trinidad and Tobago: The World Bank Net Migration Indicator (https://data.worldbank.org/indicator/SM.POP.NETM).

Table 1.13:
Most data are from the World Bank Trade (% of GDP) Indicator (https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS), with the following exceptions:
Antigua and Barbuda, St. Vincent and the Grenadines, Barbados, and Dominica: Macrotrends (https://www.macrotrends.net/countries/ATG).
Grenada: Trading Economics (https://tradingeconomics.com/grenada/trade-percent-of-gdp-wb-data.html).

Table 1.14:
Jeju (South Korea) population growth rates: World Population Review (https://worldpopulationreview.com/world-cities/jeju-population).
Luzon (Philippines) population growth rate: Commission on Population and Development (https://rpo3.popcom.gov.ph/popcom-iii-central-luzon-population-to-hit-12-6-million-by-2021).
Phuket (Thailand) population growth rate: World Population Review (https://worldpopulationreview.com/world-cities/phuket-population).
Prince Edward Island (Canada) population growth rate: PEI Population Report Quarterly (https://www.princeedwardisland.ca/en/information/finance/pei-population-report-quarterly).
Taiwan (China) population growth rate: Macrotrends (https://www.macrotrends.net/countries/TWN/taiwan/population-growth-rate).
Hainan (China) population from the Hainan Provincial Bureau of Statistics (http://stats.hainan.gov.cn/tjj/tjsu/ndsj/)

Table 1.15:
Greenland (Denmark): Statista (https://www.statista.com/statistics/976909/crude-birth-rate-in-greenland).
Hainan Island (China): Knoema (https://knoema.com/atlas/China/Hainan/Birth-Rate).
Hawai'i (USA): Hawai'i Health (http://ibis.hhdw.org/ibisph-view/query/result/birth/BirthCntyPop/BirthRate.html).
Java (Indonesia) birth rate and death rate data uses national level data from Knoema (https://knoema.com/atlas/Indonesia/Death-rate).
Jeju (South Korea) death rate is from Data Korea (http://datakorea.datastore.or.kr/en/profile/geo/jeju/#category_physician_status_and_medical_institution).
Luzon (Philippines): Philippines Statistics Authority (https://psa.gov.ph/vital-statistics/id/138794).
Okinawa (Japan): Statista (https://www.statista.com/statistics/1013182/japan-number-deaths-okinawa).
Prince Edward Island (Canada) data is from the Government of Prince Edward Island (https://www.princeedwardisland.ca/sites/default/files/publications/pt_pop_rep_0.pdf & https://www.princeedwardisland.ca/sites/default/files/publications/women_in_pei_a_statistical_review_2020.pdf).
Taiwan (China): Macrotrends (https://www.macrotrends.net/countries/TWN/taiwan/birth-rate).
Tasmania (Australia): Australian Bureau of Statistics (https://www.abs.gov.au/statistics/people/population/births-australia/latest-release).

Table 1.16:
Gotland (Sweden) data uses national data from Statista (https://www.statista.com/statistics/523689/sweden-average-life-expectancy-at-birth-by-gender).
Greenland (Denmark): Index Mundi (https://www.indexmundi.com/greenland/life_expectancy_at_birth.html).
Hainan Island (China) data uses national data from Statista (https://www.statista.com/statistics/263761/life-expectancy-of-women-in-china).

Hawai'i (USA) data uses national data from Statista (https://www.statista.com/statistics/263736/life-expectancy-of-women-in-the-united-states).
Jeju (South Korea) data uses national data from the Institute for Health Metrics and Evaluation (http://www.healthdata.org/south-korea).
Luzon (Philippines) data uses national data from the World Bank (https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=PH).

Table 1.17:
Greenland (Denmark): Statista (https://www.statista.com/statistics/455831/urbanization-in-greenland).
Data for Hainan (China), Java (Indonesia), Phuket (Thailand), and Luzon (Philippines) uses national data from the World Bank (https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS).
Okinawa (Japan): World Population Review (https://worldpopulationreview.com/world-cities/okinawa-population).
Prince Edward Island (Canada) data is from Statista (https://www.statista.com/statistics/608664/population-distribution-of-prince-edward-island-by-rural-urban-type) and the Government of Prince Edward Island (https://www.princeedwardisland.ca/sites/default/files/publications/pei_pop_dem_l_f_stats.pdf).
Taiwan (China): Worldometer (https://www.worldometers.info/world-population/taiwan-population).

Table 1.18
Bali (Indonesia): CEIC (https://www.ceicdata.com/en/indonesia/employment-by-province/employment-bali).
Gotland (Sweden): European Commission EURES
(https://ec.europa.eu/eures/printLMIText.jsp?lmiLang=en&regionId=SE0&catId=2606).
Hainan (China): CEIC (https://www.ceicdata.com/en/china/employment-region/employment-hainan).
Hawai'i (USA): US Bureau of Labor Statistics (https://www.bls.gov/eag/eag.hi.htm).
Java (Indonesia): CEIC (https://www.ceicdata.com/en/indonesia/unemployment-rate-by-province/unemployment-rate-java-east).
Jeju (South Korea): Korea Data Agency (http://datakorea.datastore.or.kr/en/profile/geo/jeju).
Luzon (Philippines): Philippine Statistics Authority (http://rsso03.psa.gov.ph/article/april-2021-central-luzon%E2%80%99s-employment-situation situation).
Okinawa (Japan): Statistics Japan (https://stats-japan.com/t/kiji/11187).
Prince Edward Island (Canada): Labour Force Survey Annual Report 2020
(https://www.princeedwardisland.ca/sites/default/files/publications/fin_statcan_labo_1.pdf).
Taiwan (China): Trading Economics (https://tradingeconomics.com/taiwan/labour-costs).

Table 1.19
Bali (Indonesia): Pemerintah Provinsi Bali (https://baliprov.go.id).
Hainan (China): GDP is from the Hainan Provincial Bureau of Statistics
(http://stats.hainan.gov.cn/tjj/tjgb/fzgb/n_81550/202102/t20210220_2936215.html); GDP per capita is from CEIC
(https://www.ceicdata.com/zh-hans/china/gross-domestic-product-per-capita/gross-domestic-product-per-capita-hainan).
Hawai'i (USA): Statista (https://www.statista.com/statistics/187859/gdp-of-the-us-federal-state-of-hawaii-since-1997).
Java (Indonesia): Global Business Guide (http://www.gbgindonesia.com/en/main/useful_resources/information_by_province/information_by_province-java.php).
Jeju (South Korea): Korean Statistical Information Service
(https://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1C86&conn_path=I2&language=en).
Okinawa (Japan): Okinawa Prefecture Government
(https://www.pref.okinawa.jp/site/shoko/kigyoritchi/seibi/documents/gaiyou.pdf).
Phuket (Thailand): CEIC (https://www.ceicdata.com/en/thailand/regional-gdp-sna93-southern-current-price-rev-4/gdp-phuket-gross-domestic-product-gdp).
Prince Edward Island (Canada): Government of Prince Edward Island (https://www.princeedwardisland.ca/en/information/finance/gross-domestic-product-gdp-by-income-and-expenditure).
Taiwan (China): GDP is from Trading Economics (https://tradingeconomics.com/taiwan/gdp); GDP per capita is from Knoema (https://knoema.com/atlas/Taiwan-Province-of-China/GDP-per-capita).
Tasmania (Australia): Knoema (https://knoema.com/atlas/Australia/Tasmania/GDP-per-Capita).

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PART II

Island sustainability and the sustainable development goals

Windmill farms like this one in Cyprus are an example of how Cyprus is actively seeking to encourage the growth of its green economy over the period 2021–2030 by increasing its renewable energy mix, energy efficiency, and electro-mobility infrastructure.

2

Islands and the Sustainable Development Goals (SDGs): A holistic perspective

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ABSTRACT

Islands, while individually distinct, share a set of common socio-economic and environmental vulnerabilities and assets which simultaneously impede and support their ability to achieve the United Nations 2030 Agenda for Sustainable Development and its accompanying Sustainable Development Goals

(SDGs). COVID-19 has amplified these vulnerabilities and opportunities. Many islands have experienced substantial drops in international tourism revenues and remittances while dealing with negative health impacts and associated lockdown measures. Despite these challenges, islands have been among the most successful jurisdictions in managing pandemic outbreaks, leading some to believe that they may recover better and safeguard progress on the SDGs. Islands are pushing forward through innovative development strategies such as climate action and green energy transformation, propelling the blue economy, and accelerating digital transformation. The objective of this chapter is to provide a holistic perspective on island sustainability through an assessment of their SDG progress and actions in the post-COVID-19 period through a systematic analysis of SDG Reports, Voluntary National Reviews (VNRs), and other SDG-related country plans. Actions on islands that positively contribute to SDG progress are presented through island case studies. The chapter concludes with suggestions on how islands can better achieve the SDGs, and lessons going forward through closer interactions with the SDGs and country development plans and goal-based development, deepening financing, improved stakeholder engagement, and strengthening technical capacity in a post-COVID-19 era.

INTRODUCTION

Island states are spread across the globe in the Caribbean, Pacific, Atlantic, and Indian Oceans, and the Mediterranean and South China Seas. They account for about 1% of the world's population (Baldacchino, 2007) but represent one-fifth (45 out of 193) of all United Nations (UN) member states. Thirty-eight of these island states fall within the Small Island Developing States (SIDS) grouping recognized by the UN as a distinct group of developing countries facing specific social, economic, and environmental vulnerabilities which impede their ability to achieve sustainable development. There are also four 'developed' island states in Europe, referred to as 'small island states' (Connell, 2013). In addition, there are substantial numbers of sub-national island jurisdictions (SNIJs), which are territories that continue to be associated with a larger sovereign state, but with a high level of internal autonomy found mainly in the developing world (Baldacchino, 2006; McElroy & Pearce, 2006; Stuart, 2009). Island countries and territories have a long history of commitment to the goal of sustainable development. They pioneered and adopted the Barbados Plan of Action (BPoA) in 2004, followed by the 2005 Mauritius Strategy of Implementation (MSI) and the 2010 MSI+5 review, and the SIDS Accelerated Modalities of Action (SAMOA) Pathway in 2014 and its review in 2018. At the UN Sustainable Development Summit in New York in 2015, island states delivered passionate and compelling speeches regarding the adoption of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) which were unanimously adopted by 193 member states (Randall, 2021).

The 2030 Agenda and its accompanying 17 SDGs and 169 targets provide an integrated, ambitious, and transformative global roadmap for achieving sustainable development by 2030. The literature purports that it provides a framework for recovery from COVID-19 (Allen et al., 2021; Sachs et al., 2020). The SDGs "recognize that ending poverty is the greatest global challenge and an indispensable requirement for sustainable development" (United Nations, 2015, p. 5). The SDGs are fundamentally different from the Millennium Development Goals in that they are considered to be robust and inter-linked based on the framework of the three pillars of sustainability: economic, social, and environmental. The SDGs are built on the core principles of "leaving no one behind," "inclusiveness," and "multi-stakeholder partnerships" (United Nations, 2015), emphasizing a holistic approach to achieving sustainable development for all. The COVID-19 pandemic has stalled and even erased some of the achievements made on the SDGs (Mukarram, 2020). The pandemic presents a real threat that islands may be left behind; it has resulted in increased poverty and unemployment for the first time since the adoption of the Goals (Sachs et al., 2021). The attainment of the SDGs nevertheless remains a key policy objective for island countries and territories and, for most forums, an important component of their post-COVID-19 recovery and growth strategy.

THE PANDEMIC PRESENTS A real threat that islands may be left behind; it has resulted in increased poverty and unemployment for the first time since the adoption of the Goals.

Islands, while individually distinct, share a common set of structural characteristics, including small size, remoteness, export concentration and tourism dependence, high food imports, and exposure to climate risks and natural disaster shocks, all of which impede their socio-economic outcomes and ability to achieve the SDGs (Sachs et al., 2020; Sachs et al., 2021). Islands also differ by income level, population size, land area, and type of economic activity. Consequently, their performance on the SDGs varies significantly. COVID-19 has also impacted islands differently. Most islands have been successful in managing COVID-19 outbreaks and have kept their population safe owing to their geography and the timely and stringent lockdown measures adopted (Sindico et al., 2020). There are, however, places such as The Bahamas, Jamaica, and Trinidad and Tobago where the number of COVID-19 cases and deaths were high due to a prevalence of pre-existing health conditions and a lack of capacity for detection and treatment (United Nations Department of Economic and Social Affairs [UN DESA], 2020). While health impacts varied, all island states and territories were among the worst hit by the associated economic crisis of COVID-19. GDP in 2021 is likely to shrink by 6.9% in small island economies (International Monetary Fund, 2020). Islands have experienced substantial drops in international tourism revenues, remittances, and capital flows, and face high and growing debt (UN DESA, 2020). The pandemic has also revealed the fragility of islands' socio-economic

assets such as tourism, food security, health, and digital infrastructure (Sindico et al., 2020). Nevertheless, slogans such as 'building back better', 'new normal', and 'greening of the economy' demonstrate that islands view the pandemic as an opportunity to recover and safeguard progress on the SDGs (Randall, 2021). Islands are pushing forward through innovative development strategies such as climate action and renewable energy transition, propelling the blue economy, and accelerating digital transformation. These strategies are, however, dependent on access to international financing, goal-based development, and technical capacity, as well as stakeholder buy-in and engagement.

THE COVID-19 PANDEMIC HAS also revealed the fragility of islands' socio-economic assets such as tourism, food security, health, and digital infrastructure.

The objective of this chapter is to provide a holistic perspective on island sustainability through an assessment of their SDG progress and actions. The chapter provides an overview of islands' SDG progress and projections in the post-COVID-19 period through a systematic analysis of island states' SDG Reports and their Voluntary National Reviews (VNRs) and SDG-related country plans. Actions on islands that positively contribute to SDG progress are presented through island case studies; on renewable energy, the blue economy, and digitalization. The chapter concludes with suggestions on how islands can better achieve the SDGs, and lessons going forward in a post-COVID-19 era.

METHODS

The methodology for this chapter employed a systematic analysis of island states' SDG Reports, their VNRs, and SDG-related country plans which provided quantitative and qualitative data in order to put forward a holistic perspective on the SDGs and island sustainability. To track SDG progress and projections, two data sources were used: the *Online database for the Sustainable Development Report 2021* (Sachs et al., 2021) and 2020's *Sustainable Development Report* (Sachs et al., 2020). The *Online database for the Sustainable Development Report 2021*, compiled by Sachs and colleagues (2021), provides overall results for all countries (not just islands) including index score, goal dashboard, and trend dashboard for all SDG indicators and goals. These data form the basis for preparing the annual *Sustainable Development Report* (Sachs et al., 2020), which gives an overview of how countries are progressing towards meeting each of the SDGs. The data come primarily from the World Bank, as well as "non-official sources" (Sachs et al., 2020, p. 23) at the country level such as research institutes and non-governmental organizations. To create the composite SDG score, each of the goals are weighed equally and the score signifies a country's position between the worst (0) and the best (100) outcomes (Sachs et al., 2020). The goal dashboard classifies SDG progress under four-groups: *goal achievement*, *challenges remain*, *significant challenges*, and *major challenges*.

The trend dashboard gives the following categories: *on track or maintaining achievement*, *moderately increasing*, *stagnating*, and *decreasing*. A lack of data in island states hindered a full assessment of their progress. While the data provide an overview of the relative success of island states in meeting the SDGs, the data are not disaggregated by SNIJs. To consider island jurisdictions' progress on the SDGs, surveys of 782 individuals using a closed-ended questionnaire were undertaken between 2020 and 2021 in island states and SNIJs on their perception of the success of their governments in achieving the SDGs under the Sustainable Island Futures Project at the University of Prince Edward Island (UNESCO Chair in Island Studies and Sustainability, 2021). The surveys were carried out within the broader framework of a research project comparing small island states and semi-autonomous island jurisdictions under the aegis of the UNESCO Chair in Island Studies and Sustainability.

SDG themes, as well as actions on islands that positively contribute to achieving the SDGs, are presented using information from countries' VNRs and SDG-related national plans provided by island states in 2021 as they seek to re-build following the COVID-19 pandemic. From these plans, actions on renewable energy, the blue economy, and digitalization on islands that positively contribute to SDG progress are presented through island case studies, namely those of Antigua and Barbuda, Cabo Verde, Cyprus, Seychelles, Samoa, Solomon Islands, and Mauritius.

TRACKING SDG PROGRESS

The SDG scores and rankings of all island states using data from the *SDG Report 2021* compiled by Sachs et al. (2021) are shown in Table 2.1. The report demonstrates wide heterogeneity in SDG progress among island states. Small island states in Europe, along with Japan and New Zealand, have high SDG scores and are highly ranked, while SIDS, particularly Madagascar, Papua New Guinea, and Haiti, have relatively lower scores and rank. Table 2.1 also reveals a lack of data in many jurisdictions, which hindered their SDG progress assessment.

Table 2.2 illustrates island states' SDG trend across the 17 Goals, again using data from the *SDG Report 2021* (Sachs et al., 2021). Generally, all islands have performed well and are making good progress on SDG 4 (*quality education*) and SDG 7 (*affordable and clean energy*). Performance on SDG 13 (*climate action*) has also been good, although in some cases (Bahrain and Singapore) there are high levels of domestic or imported CO_2 emissions. Islands face their biggest challenge in achieving SDG 1 (*no poverty*), SDG 2 (*zero hunger*), SDG 3 (*good health and well-being*), SDG 9 (*industry, innovation, and infrastructure*), SDG 14 (*life below water*), and SDG 15 (*life on land*), as their structural vulnerabilities affect their ability to achieve these goals (Sachs et al., 2021). Islands, particularly SIDS, have low scores under SDG 17 (*partnerships for the goals*) because of their data gaps, which makes it challenging to monitor. The top five

performing islands by SDG trend were the UK, Iceland, Malta, Japan, and New Zealand, while the bottom five were Haiti, Papua New Guinea, Madagascar, São Tomé and Príncipe, and Vanuatu.

The results of a survey of 782 individuals undertaken between 2020 and 2021 in island states and SNIJs and compiled by the UNESCO Chair in Island Studies and Sustainability (2021) are shown in Table 2.3. These results generally demonstrate that in 'developed' island states and SNIJs, such as Cyprus, Iceland, Prince Edward Island, and Newfoundland, there is a stronger perception of government success in achieving the SDGs compared to those participants responding from SIDS and developing subnational jurisdictions such as Grenada, St. Lucia, Tobago, and Lesvos.

TABLE 2.1: **Island States' SDG Scores and Ranks**

Continent	Island State	SDG Score	SDG Rank	Island Rank
Asia	Japan	79.8	18	3
	Singapore	69.9	76	11
	Indonesia	66.3	97	19
	Timor-Leste*	–	–	–
	Brunei Darussalam	68.3	84	15
	Philippines	64.5	103	21
	Sri Lanka	68.1	87	17
	Maldives	69.3	79	12
	Bahrain	66.1	100	20
Europe	Cyprus	74.9	40	7
	Iceland	78.2	29	5
	United Kingdom	81.0	13	1
	Ireland	80.0	17	2
	Malta	75.7	33	6
Africa	Cabo Verde	68.1	86	16
	Madagascar	49.0	159	27
	Seychelles*	–	–	–
	Mauritius	66.7	95	18
	Comoros*	–	–	–
	São Tomé and Príncipe	58.8	124	24
Oceania	New Zealand	79.1	23	4
	Papua New Guinea	51.3	151	26
	Solomon Islands*	–	–	–
	Vanuatu	60.5	119	23

TABLE 2.1: Island States' SDG Scores and Ranks (cont'd)

Continent	Island State	SDG Score	SDG Rank	Island Rank
	Fiji	71.2	62	9
	Tonga*	–	–	–
	Samoa*	–	–	–
	Nauru*	–	–	–
	Micronesia, Fed. States*	–	–	–
	Marshall Islands*	–	–	–
	Kiribati*	–	–	–
	Tuvalu*	–	–	–
	Palau*	–	–	–
	Cook Islands+	–	–	–
	Niue+	–	–	–
Caribbean/	Cuba	73.7	49	8
Americas	Haiti	51.4	150	25
	Dominican Republic	70.8	67	10
	Jamaica	69.0	81	13
	Bahamas, The*	–	–	–
	St. Kitts and Nevis*	–	–	–
	Antigua and Barbuda*	–	–	–
	St. Vincent and the Grenadines*	–	–	–
	St. Lucia*	–	–	–
	Grenada*	–	–	–
	Barbados	68.4	83	14
	Trinidad and Tobago	63.5	108	22
	Dominica*	–	–	–

NOTES: Island rankings were determined by the author.
* Islands excluded from the 2021 SDG Index due to insufficient data.
+ Islands excluded from SDG Index 2021 report.

Source: Author's compilation based on Randall (2021) and data from Sachs et al. (2021).

TABLE 2.2: **Island States' Sustainable Development Goal Trends**

Country	Sustainable Development Goal (SDG) Number																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Antigua and Barbuda	.	→	↗	↑	↗	→	↑	↑	↗	.	.	.	→	→	→	.	.
Bahrain	.	→	↗	↑	→	↗	↑	↑	↗	.	↓	.	↗	→	↓	→	.
Bahamas, The	.	↗	↗	.	↗	↑	↑	↗	↗	.	.	.	→	→	↓	↑	↗
Barbados	→	↗	↗	↑	↗	↑	↑	↗	→	.	.	.	→	→	↓	↗	.
Brunei Darussalam	.	→	↗	↑	↗	↑	↗	→	↑	.	.	.	→	→	→	↗	.
Comoros	↓	→	→	↓	↗	→	↗	↓	→	.	→	.	↑	→	↓	→	.
Costa Rica	↗	↗	↗	↑	↑	↑	↑	→	↗	.	↑	.	↗	→	↓	↗	↗
Cuba	.	↗	↗	↗	→	↗	↑	↑	↗	.	↗	.	↑	→	→	→	.
Cyprus	↑	→	↗	↑	↗	↗	↗	↑	↗	.	↗	.	→	↗	↗	↗	→
Dominica	.	→	.	↓	.	.	↑	.	↗	.	.	.	↑	↗	↓	→	↑
Dominican Republic	↑	↗	↗	↑	↑	↗	↗	→	↗	.	→	.	↗	↗	→	→	→
Fiji	↗	↗	→	↑	→	↗	↗	↑	↗	.	↗	.	→	↗	↓	.	→
Micronesia, Fed. States	.	.	↗	↑	.	↗	↗	.	→	.	.	.	↑	→	↓	.	↗
Gabon	→	→	→	.	→	→	↑	↗	↗	.	→	.	↑	→	↗	↓	→
Grenada	.	→	↗	↑	↑	→	↑	.	↑	.	→	.	→	→	↓	→	↓
Haiti	↓	→	→	.	→	→	→	↗	↗	.	→	.	↑	↗	→	→	→
Iceland	↑	↗	↑	↗	→	↗	↑	↗	↑	↑	↗	.	↗	→	↓	↑	↗
Jamaica	↓	→	↗	↓	↑	↗	↗	↑	→	.	→	.	→	→	↓	→	↗
Japan	↑	↗	↑	↑	↗	↑	↗	↑	↑	.	↑	.	→	→	↓	↑	↗
Kiribati	.	→	↗	.	→	↗	↗	.	→	.	.	.	↑	↗	.	.	↗
Madagascar	↓	↗	→	↓	↗	→	→	↗	→	.	↗	.	↑	→	↓	→	↗
Maldives	↑	↗	↗	↑	→	↑	↑	→	↗	.	↑	.	↗	↗	↓	↑	↗
Marshall Islands	.	↓	.	↓	↓	↗	↗	.	→	.	.	.	.	.	.	.	↗
Malta	↑	↗	↗	↑	↗	↗	↑	↑	↗	.	↑	.	↗	↗	↗	→	↗
Mauritius	↑	→	↗	↑	↗	↗	↗	→	↗	.	↗	.	→	→	↓	→	→
Nauru	.	→	.	↑	→	↗	↑	.	→	.	↗	.	→	↗	.	.	.
New Zealand	↑	↗	↗	↗	↑	↑	↑	↑	↗	.	↗	.	↗	→	↓	↗	↗
Philippines	↗	↗	↗	↓	→	↗	→	↗	↗	.	→	.	↑	→	↓	→	→
Palau	.	→	.	.	.	↑	↑	.	↗	.	↑	.	.	↗	↓	.	.
Papua New Guinea	↓	→	→	.	→	→	↗	↑	→	.	→	.	↑	→	↓	→	↗
Singapore	↑	↗	↗	↑	↗	↗	↑	↗	↑	.	↗	.	↗	→	↓	↗	↗
Solomon Islands	→	→	↗	↓	→	↓	↗	.	→	.	→	.	↑	→	↓	→	↗
São Tomé and Príncipe	↓	→	↗	.	→	↗	→	→	→	.	→	.	↑	↗	↓	→	→

TABLE 2.2: Island States' Sustainable Development Goal Trends (cont'd)

Country	Sustainable Development Goal (SDG) Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Sri Lanka	↑	↗	↗	↑	→	↗	↗	↗	↗	.	→	.	↑	→	↓	→	→
Seychelles	.	→	↗	↑	↓	→	↑	.	↗	.	.	.	→	↗	→	↑	↗
St. Vincent and the Grenadines	.	↗	↗	↑	↗	→	↑	↓	→	.	.	.	↓	→	↓	↗	↗
St. Kitts and Nevis	.	→	.	.	.	.	↑	.	↗	.	.	.	→	→	↗	.	.
St. Lucia	↗	→	→	↑	↗	↗	↑	↗	↗	.	↗	.	↑	→	↓	→	↓
Samoa	↗	→	↗	↑	→	↑	↗	→	→	.	↗	.	↑	→	→	↑	→
Togo	→	→	→	↗	→	↗	→	↑	↗	.	↓	.	↑	↗	→	→	→
Timor-Leste	↓	→	↗	↑	→	↗	↗	↓	→	.	↑	.	.	↗	→	↑	↗
Tonga	↗	→	↗	.	↗	↗	↗	.	→	.	↑	.	↑	→	.	↑	↗
Trinidad and Tobago	↑	↗	↗	.	↗	↗	↗	↗	↗	.	↑	.	→	↓	↓	→	↗
Tuvalu	.	→	.	↓	↓	→	↗	.	→	.	↑	.	↑	↗	.	.	.
United Kingdom	↗	→	↗	↗	↗	↗	↑	↗	↑	↓	→	.	↗	↗	↗	↗	↑
Vietnam	↑	↗	↗	↑	↗	↑	↑	↗	↗	.	↑	.	→	→	↓	↗	→
Vanuatu	↓	→	↗	.	→	↗	↗	↑	↗	.	→	.	↑	→	↓	↑	↗

NOTES: ↑ On track or maintaining achievement
↗ Moderately Increasing
→ Stagnating
↓ Decreasing;
A dot (.) indicates missing information.
Top five performing islands by SDG trend are shaded in orange; lowest five are shaded in grey.

Source: Author's compilation based on data from Sachs et al. (2021).

TABLE 2.3: **Island Success in Achieving SDGs**

	Sustainable Development Goal (SDG) Number							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Tobago	4.44	4.5	4.53	3.93	4.2	4.21	4.77	4.82
Grenada	4.51	4.23	4.51	4.09	3.7	3.66	4.61	4.74
PEI	4.62	4.33	4.12	3.64	3.94	3.86	4.29	4.36
St. Lucia	4.89	4.87	4.98	4.27	3.8	4.18	4.76	5.04
Lesvos	5.46	5.27	5.21	4.64	4.71	4.67	5.26	5.17
Cyprus	4.16	4.11	3.71	3.63	3.79	3.22	3.86	4.08
Newfoundland	4.28	4.5	4.08	3.75	3.8	4.27	4.58	4.99
Iceland	4.41	3.76	3.24	2.88	2.65	2.71	2.63	3.65
La Réunion	4.85	4.5	4.23	4.1	4.44	3.92	4.44	5.0
Mauritius	3.82	3.86	3.64	4.0	4.36	4.11	4.32	4.27

NOTES: The higher the mean value, the less successful governments are perceived to be in achieving the SDGs.
'PEI' is Prince Edward Island.

Source: Survey data, Sustainable Island Futures Project, UNESCO Chair in Island Studies and Sustainability (2021).

TABLE 2.3: **Island Success in Achieving SDGs (cont'd)**

Sustainable Development Goal (SDG) Number									Overall SDG Score
9	10	11	12	13	14	15	16	17	
4.73	5.09	4.61	5.0	4.68	4.52	4.36	4.86	4.65	**4.58**
4.49	5.43	4.45	4.61	3.81	4.28	4.38	4.28	4.43	**4.36**
4.48	5.73	4.17	4.92	4.67	4.66	4.79	4.31	5.57	**4.5**
4.89	5.09	5.0	4.64	4.5	4.41	4.42	4.83	4.85	**4.67**
5.25	5.22	5.0	5.7	5.52	5.56	5.46	5.42	5.79	**5.25**
3.62	4.32	4.0	4.22	4.24	4.03	4.38	4.22	4.11	**3.98**
4.64	5.66	4.36	5.07	5.19	4.55	4.7	4.41	5.54	**4.61**
3.65	4.2	4.1	4.44	4.39	3.73	4.14	3.47	4.2	**3.66**
4.67	5.5	4.68	4.85	5.48	5.15	4.3	4.94	5.5	**4.74**
4.05	4.57	4.34	4.68	4.66	4.7	4.63	4.45	4.41	**4.29**

PREVAILING SDG THEMES AND ACTIONS

Green energy transformation

Green energy transformation is instrumental to the achievement of the SDGs. Access to affordable, reliable, and sustainable energy is essential to achieving almost all of the SDGs, including reducing poverty and inequality; improvements in education, health, housing, water, and industrialization; and adaptation and mitigation of climate change impacts. Green energy is directly linked to SDG 7 (*affordable and clean energy*), which focuses on access to affordable, reliable, sustainable, and modern energy for all, and closely linked to SDG 13 (*climate action*), which centres around urgent action to combat climate change and reduce greenhouse gas emissions. The literature details various ways in which SDG 7 and renewable energy are fundamentally tied to all other SDGs (McCollum et al., 2018; Nerini et al., 2018). Moreover, the adoption of green energy and energy efficiency can promote long-term socio-economic recovery from COVID-19 (Allen et al., 2021).

Island states and territories are still largely dependent on fossil fuels to meet their energy needs, although they tend to have high renewable energy resource potential relative to energy demand, particularly in solar and wind (Harrison & Popke, 2018; Surroop et al., 2018). Even before the COVID-19 pandemic, islands have shown a strong interest in introducing greener options for meeting their electricity demands (Harrison & Popke, 2018). Investment in renewable energy is seen as a means of diversifying energy supplies to mitigate risks associated with oil price changes given frequent oil price shocks (Dornan, 2015; Lucas et al., 2017). Islands have also been champions in submitting their Nationally Determined Contributions under the 2015 Paris Climate Agreement to combat climate change and reduce greenhouse gas emissions, and to strengthen their position in climate change negotiations (Fry, 2016). Sindico et al. (2020) suggest that the post-COVID-19 recovery debate must include island efforts to drive a green energy transformation.

OVER THE LAST DECADE, islands have established some of the most ambitious renewable energy targets in the world.

There are many barriers that prevent the use of large-scale renewable energy on islands, including a lack of data, need for policy and regulatory frameworks, scarcity of financial opportunities and costly infrastructure, lack of human resources and technical skills, lack of economies of scale, and socio-cultural impediments (Dornan, 2015; Lucas et al., 2017). On the other hand, renewable energy generation coupled with battery or pumped hydro energy storage makes renewable energy technically and economically feasible in small islands (Vaiaso & Jack, 2021). Over the last decade, islands have established some of the most ambitious renewable energy targets in the world. For instance, Pacific SIDS aim to increase their share of renewable energy in their electricity sector by 60%–100% by 2030 but, given financial constraints, are largely dependent on financing from development partners (Dornan, 2015), which have been exacerbated by the pandemic.

There are successful examples of a green energy transition in small islands which can contribute to the attainment of the SDGs. To improve the performance and reliability of renewable energy as well as the sustainable and cost-effective utilization of indigenous renewable resources, Samoa constructed the Afolau 750 kW Biomass Gasification Plant (Government of Samoa, 2020). The plant utilizes biomass resources such as local invasive trees to generate electricity. The use of locally available resources was deemed crucial given the uncertainty brought about by the COVID-19 pandemic. In December 2019, the Solomon Islands announced the Tina River Hydropower Project, a public–private partnership worth over US$ 200 million financed through loans and grants. When the project is completed, the country will transition from a 3% share of renewable energy (hydro and solar in 2017) to 67% (Solomon Islands Government, 2020). The project will reduce the country's reliance on imported diesel by 70%, and

When complete, the Tina River hydropower project in Solomon Islands will reduce the country's reliance on imported diesel by 70%, and transition its renewable energy from the current 3%, to 67%.
Photo: tuproyecto/Pixabay

will also reduce the country's greenhouse gas emissions by two and half times its national 2025 target (Solomon Islands Government, 2020). These renewable energy initiatives demonstrate action on achieving not only SDG 7 (*affordable and clean energy*), but also SDG 11 (*sustainable cities and communities*), SDG 12 (*responsible consumption and production*), and SDG 13 (*climate action*).

During the COVID-19 outbreak on the two-island country of Antigua and Barbuda, the nation was still recovering from 2017's Hurricane Irma. Irma completely wiped out Barbuda, following which it adopted a 'green island concept' to build resilience against external shocks (such as the COVID-19 pandemic) by increasing energy and food security, and attracting tourists. The Antigua and Barbuda Government intends to build an 800 kW solar and 800 kWh Lithium-ion Battery storage plant on the island that is hurricane-resilient, climate-resilient, safe, reliable, and sustainable. The plant is expected to save the country over US$ 320,000 per year through the reduction in oil imports, and to offset 690 tonnes of carbon dioxide annually (Government of Antigua and Barbuda, 2021). The program requires significant funding, which will be drawn from the Barbuda Recovery Fund, private investors, bilateral assistance, development partners, and donor agencies. Antigua and Barbuda's green island concept supports the attainment of SDG 7 (*affordable and clean energy*), SDG 11 (*sustainable cities and communities*), SDG 12 (*responsible consumption and production*), and SDG 13 (*climate action*).

In 2016, Antigua installed this 3-MW ground-mounted solar power plant project at its newly constructed V.C. Bird International Airport. This was Antigua's first major infrastructure project to utilize renewable technology.

Source: 2021 Voluntary National Review of Antigua + Barbuda

Cyprus is actively seeking to encourage the growth of its green economy over the period 2021–2030 by increasing its renewable energy mix, energy efficiency, and electro-mobility infrastructure, and by promoting the circular economy (Republic of Cyprus, 2021). The country will be investing €1.2 billion to promote projects, actions, and reforms that contribute to reducing the impacts of climate change and greenhouse gas emissions. The country is ending its energy isolation through the EuroAsia Interconnector. This is a cross-border interconnector between Cretan, Cypriot, and Israeli power grids via a subsea direct current cable with High-Voltage Direct Current onshore converter stations at each connection point, and highlights the importance of partnerships and cooperation. The case of renewable energy in Cyprus, while directly supporting SDG 7 (*affordable and clean energy*), also supports SDG 11 (*sustainable cities and communities*), SDG 12 (*responsible consumption and production*), SDG 13 (*climate action*), and SDG 17 (*partnerships for the goals*).

The blue economy

The World Bank (2017) defines the 'blue economy' as the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem. The ocean can support countries in creating improved conditions for sustainable development, and the blue economy highlights balancing the economic, social, and environmental dimensions of sustainable development in relation to oceans (Griggs et al., 2013). This balance is, however, not easily achievable given that the conditions of the oceans have deteriorated because of human and industrial activities and conflicting goals, including pollution, unsustainable fishing, and biological degradation (Lee et al., 2020). The blue economy is specifically recognized by the SDGs in Goal 14 (*life below water*), which sets a target that, by 2030, economic benefits will be increased from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism

(Griggs et al., 2013; Spalding, 2016). However, sustainable development of the oceans would have wider sustainable development effects and hence contribute to the achievement of all 17 SDGs (Lee et al., 2020; Ocean University Initiative, 2021).

Islands' ocean resources — that is, their Exclusive Economic Zones — are on average more than 2,000 times the size of their land masses, and ocean-based sectors such as tourism and fisheries are already important economic activities (World Bank, 2017). While COVID-19 has halted ocean-based activities globally, demand continues to be driven by a growing population and need for energy, food, and jobs — and islands can take advantage of this opportunity (Organisation for Economic Co-operation and Development [OECD], 2021). Islands have vast untapped reserves of fish stocks, marine algae, and micro-organisms which have biotechnological applications and pharmaceutical uses. To develop these resources, international cooperation, technology, and capacity building, and innovative financing approaches such as blue bonds, debt swaps, and debt restructuring are important (OECD, 2021). Moreover, overfishing, ocean pollution, and climate change threaten the development of marine resources (Hadjimichael, 2018). Small islands also lack the infrastructure and capacities for maritime security and coastal protection which are essential for establishing a blue economy (Childs & Hicks, 2019). Nevertheless, there are cases of extensive development of the blue economy in islands.

MAURITIUS AND SEYCHELLES achieved global recognition for championing the blue economy. Mauritius made the blue economy a pillar of its sustainable development strategy with the aim of doubling its contribution to GDP by 2025.

Mauritius and Seychelles achieved global recognition for championing the blue economy. Mauritius made the blue economy a pillar of its sustainable development strategy with the aim of doubling its contribution to GDP by 2025. To accomplish this, it created an 'Ocean Economy Roadmap' (Government of Mauritius, 2013) to make use of untapped ocean resources in tourism, seaports, and fishing while building capacity in aquaculture, marine biotechnology, and renewable energy. The country set up a Ministry of Blue Economy, Marine Resources, Fisheries, and Shipping with the authority to coordinate and manage ocean-related activities. It also established a Coordinating Committee to bring together relevant stakeholders and technical working groups, which focus on aligning blue economy development with the SDGs. Seychelles, through its *Blue Economy Strategic Policy Framework and Roadmap (2018-2030)*, implemented the 'Blue Economy Framework' and a 'Marine Spatial Plan' to encourage sustainable and inclusive use of its ocean (Republic of Seychelles, 2020; Senaratne, 2020). The Seychelles *Roadmap* demonstrates how countries can bring national development thinking in line with the SDGs. The country also sold the world's first sovereign blue bond — "debt for dolphins" — valued at US$ 15 million (Republic of Seychelles, 2020). The Republic recognizes that there is need for stakeholder engagement in the development of the sector, and the private sector and civil society

provide marine education and marine conservation activities to tourists and residents. Development of the blue economy in both Mauritius and Seychelles shows the interplay between SDG 14 (*life below water*) and other goals, including SDG 8 (*decent work and economic growth*), SDG 9 (*industry, innovation, and infrastructure*), and SDG 12 (*responsible consumption and production*).

SIDS acknowledge the importance of building research and technical capacity for the development of marine resources. In an aim to develop the blue economy in the Caribbean, it was announced in November 2020 that a Centre of Excellence for Oceanography and the Blue Economy would be established as a collaboration between the Government of Antigua and Barbuda and the University of the West Indies (Government of Antigua and Barbuda, 2021). The Centre aims to advance intellectual progress and build institutional and technical capacity in marine science and the blue economy, and to identify economic opportunities for Caribbean SIDS (Government of Antigua and Barbuda, 2021), which can enable positive action around SDG 4 (*quality education*), SDG 8 (*decent work and economic growth*), SDG 9 (*industry, innovation, and infrastructure*), and SDG 14 (*life below water*).

Digital transformation

Digital transformation is a process that can be harnessed for equitable and sustainable development, and is defined by the Organisation for Economic Co-operation and Development (OECD; 2019, p. 18) as "the economic and societal effects of digitization and digitalization." While SDG 4 (*quality education*), SDG 5 (*gender equality*), SDG 9 (*industry, innovation, and infrastructure*), and SDG 17 (*partnerships for the goals*) include information and communications technology (ICT) related goals and targets, digital transformation can be a powerful and cross-cutting tool that can accelerate progress towards all SDGs (Castro et al., 2021; International Telecommunication Union [ITU], 2019). COVID-19 has accelerated the uptake of digital solutions and sped up the digital transformation. The use of digital technology has helped governments, businesses, and people manage pandemic responses, and to cope with the immediate effects of social distancing and other containment measures through remote working and online schooling (Vargo et al., 2020). There are, however, instances where poor and vulnerable groups without digital devices and persons that are not familiar with technology can be excluded from this process (Masiero, 2020; Vargo et al., 2020).

Island states and territories have relatively good access to internet connectivity. It is estimated that mobile broadband coverage reaches 90% of the population in SIDS, and the average price of a mobile data package is 5% of per capita income (ITU, 2019). Further, disruptive and transformative technologies such as artificial intelligence, blockchains, drones, and mobile money are being used to enhance sustainable development (Singh et al., 2020) — however, their application in SIDS is limited, given tech-

nical, financial, and human resource constraints (ITU, 2019). Nevertheless, there are prominent examples where islands have adopted widespread use of digital technology for sustainable development.

Cyprus is establishing a long-term strategy in its recovery from COVID-19 with a strong focus on digitalization in its *Long-Term Economic Strategy and National Digital Strategy* (Republic of Cyprus, 2021). The pandemic accelerated the digitalization of public and private sectors and led to new electronic services, and the country will leverage these developments and utilize its strong and growing ICT sector to expand value-added and innovation in services such as consulting, engineering, shipping, tertiary education, and health (Republic of Cyprus, 2021). The country established the Deputy Ministry of Research, Innovation and Digital Policy to boost its digital transformation. Other initiatives include the 'Smart City Strategy' which involves smart parking, smart lighting, and smart waste collection management solutions, and the 'e-Skills Action Plan', which is a set of reforms and initiatives aimed at enhancing the digital skills of the current and future workforce and the general population. Digital transformation in Cyprus contributes to the achievement of several goals, namely SDG 3 (*good health and well-being*), SDG 4 (*quality education*), SDG 5 (*gender equality*), SDG 8 (*decent work and economic growth*), SDG 9 (*industry, innovation, and infrastructure*), SDG 10 (*reduced inequalities*), and SDG 11 (*sustainable cities and communities*).

CYPRUS IS ESTABLISHING a long-term strategy in its recovery from COVID-19 with a strong focus on digitalization . . . Initiatives include the 'Smart City Strategy' which involves smart parking, smart lighting, and smart waste collection management solutions, and the 'e-Skills Action Plan'.

Antigua and Barbuda has a high mobile-cellular penetration rate with low pricing compared to other countries worldwide, resulting in a high share of the population using the internet. Prior to COVID-19, internet access was provided in all schools and there was a drive to implement the curriculum in a digitized format (Government of Antigua and Barbuda, 2021). The country also provided devices for secondary school students and teachers in need, and introduced eBooks and computers in the secondary schools (Government of Antigua and Barbuda, 2021). This program proved useful when the pandemic struck, as it meant that disruptions to schooling were minimal, and has also been beneficial in terms of SDG 4 (*quality education*), SDG 5 (*gender equality*), and SDG 10 (*reduced inequalities*).

Islands enjoy strategic geopolitical positions giving them an advantage in connecting to fibre-optic submarine cables, thereby increasing their digital connectivity and revenue earnings. Cabo Verde was connected to the Atlantis-2 fibre-optic submarine cable in 2000, the West African Cable Systems in 2012, and, most recently, the EllaLink cable in 2021 (Governo de Cabo Verde, 2021). In another example, the Coral Sea Cable System is a 4,700 km long fibre optic submarine cable system linking Sydney, Australia

to Port Moresby, Papua New Guinea and Honiara, Solomon Islands. While the Government of Australia is the primary partner, Papua New Guinea and Solomon Islands jointly contributed up to one third of project costs and will hold majority ownership of the international cable and receive all revenue generated (Solomon Islands Government, 2020), which helps directly with SDG 8 (*decent work and economic growth*) and SDG 9 (*industry, innovation, and infrastructure*).

The *Ile de Brehat* laying the Coral Sea Cable System, a 4,700-km long fibre optic submarine cable system that links Sydney, Australia to Port Moresby, Papua New Guinea and Honiara, Solomon Islands.
DAFT / Sydney Morning Herald

DISCUSSION OF THE FUTURE OF ISLAND SDG ACTIONS

Island states and territories have fully committed to the SDGs, which are even viewed by some as a roadmap for post-pandemic recovery. The 2030 Agenda should, however, not be treated as a stand-alone strategy, but rather should be fully owned and integrated into national plans and strategies, adapted to the local context, and coordinated sufficiently across all sectors (Allen et al., 2021; Griggs et al., 2013). A goal-based development approach which involves starting from the quantified deadline goal and designing a realistic pathway to achieve it through key interventions, costing and financing plans, and the implementation strategy may prove useful (Sachs, 2015). Furthermore, there is need for leadership at the highest level to shape national debates and support local post-pandemic recovery strategies aligned with the SDGs, and to engage subnational levels of government, especially in SNIJs, and to align priorities and promote coordinated action at different levels of government (Mukarram, 2020).

The biggest challenge in propelling action around green energy, blue growth, and digital technology in islands for advancing the SDGs is financing (Dornan, 2015; Lucas

et al., 2017; OECD, 2021). In island states, there is high public debt and low economic growth accompanied by low domestic resource mobilization from public and private sources, and climate finance and development assistance fall short of what is required (OECD, 2021). Islands should make policy reforms aimed at improving the investment climate to attract private investment and development assistance, and reform their tax systems to increase domestic revenues. A resource mobilization strategy is important to connect the private sector, development partners, and philanthropists.

Islands also need to build technical capacity to implement actions around green and blue growth and digitization and digitalization. This involves strengthening human resource knowledge and skills as well as data collection and research and development around renewable energy, circular economy, sustainable use of marine resources, coastal protection, and digital access and solutions. It is important to involve universities and other research institutes as well as Central Statistical Offices in such initiatives.

THE BIGGEST CHALLENGE in propelling action around green energy, blue growth, and digital technology in islands for advancing the SDGs is financing . . . climate finance and development assistance fall short of what is required.

There is also a need to engage stakeholders, including the private sector and civil society, to ensure that different voices are heard and that everyone works together to identify challenges, set priorities, align actions, and mobilize resources around renewable energy, blue economy, and digital technology. The private sector has the potential to play a critical role in providing funding, innovation, training, and skills (Scheyvens et al., 2016). Much more work needs to be done to bring private players onboard to prioritize actions around the SDGs. Civil society also has a unique role in the implementation of sustainable development on account of their expertise, experience, and extensive presence in communities (Pardo, 2018).

CONCLUSION

This chapter provides a holistic perspective on island states' sustainability through an assessment of their SDG progress and actions in green energy, blue economy, and digital technology based on a systematic analysis of their SDG Reports, surveys, VNRs, and SDG-related country plans. Despite their structural vulnerabilities and the difficult environment created by COVID-19, island states and territories have made progress in the achievement of the SDGs, especially around SDG 4 (*quality education*) and SDG 7 (*affordable and clean energy*), and, to a lesser extent, SDG 13 (*climate action*). Greater attention and action around SDG 1 (*no poverty*), SDG 2 (*zero hunger*), SDG 3 (*good health and well-being*), SDG 9 (*industry, innovation, and infrastructure*), SDG 14 (*life below water*), SDG 15 (*life on land*), and SDG 17 (*partnerships for the goals*) are required. Notably, there are significant differences in progress made by 'developed' island states compared to SIDS. Moreover, large data limitations in SIDS prevent proper assessment of SDG progress. Examples of islands such as Antigua and Barbuda, Cyprus, Cabo Verde, Samoa, and Solomon Islands making progress in green energy, blue economy, and digital transformation suggest huge potential in these areas to achieve the SDGs. Although there is no one-size-fits-all formula, islands do share some common features, and advancing on closer interactions with the SDGs and country development plans, deepening financing, improved stakeholder engagement, and building capacity could help in their collective achievement of the SDGs in the post-COVID-19 era.

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Picturesque seaside fishing village in Newfoundland and Labrador, Canada.

3

Progress and success by sovereignty?

The attainment of the Sustainable Development Goals in small island states, Small Island Developing States, and subnational island jurisdictions

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ABSTRACT

Achieving the Sustainable Development Goals (SDGs) represents a crucial milestone for small island states (SIS), Small Island Developing States (SIDS), and subnational island jurisdictions (SNIJs), and understanding perceptions and support from citizens towards the SDGs is critical for governments to implement suitable policies. Notwithstanding progress in

meeting key SDGs, especially in relation to reducing poverty, social, and gender inequalities, as well as improving access to education and health, there are still areas where progress has stalled, and where governments face difficulties in interpreting public opinion needed to promote effective interventions. This chapter seeks to answer, for a selected group of SIS, SIDS, and SNIJs, the relationship between the importance given to SDGs by island citizens and the actions taken by governments to meet the SDGs. We aim to close a knowledge gap and contribute to a growing debate in island studies, in understanding the characteristics — and, potentially, factors — that shape public perceptions of success in achieving SDGs. The chapter adopts a quantitative approach by using correlation analysis, utilizing an original survey conducted in ten SIS, SIDS, and SNIJs. We find that issues connected to sovereignty, population dynamics, and wealth can potentially help to interpret current gaps in policy implementation and to support the success by governments to meet their SDG targets.

INTRODUCTION

Positioning the research in the attainment of the Sustainable Development Goals on islands

Achieving the Sustainable Development Goals (SDGs) represents a crucial milestone for small island states (SIS), Small Island Developing States (SIDS), and subnational island jurisdictions (SNIJs), given existing vulnerabilities — generally due to small size and remoteness — which limit economies of scale and increase the relative costs of practically everything (Briguglio et al., 2020). In this context, understanding perceptions and support from citizens towards the SDGs is critical for governments in islands, especially in implementing broadly accepted policies to attain those goals.

Notwithstanding progress in meeting key SDGs, especially in relation to reducing poverty, social, and gender inequalities, as well as improving access to education and health (Sachs et al., 2020), there are still areas where progress has stalled, where governments face difficulties in interpreting what factors delay the achievement of such goals, and how interpreting public opinion can help to promote effective interventions.

This chapter seeks to answer, for a small group of SIS, SIDS, and SNIJs, the relationship between the importance given to SDGs by island citizens and the actions taken by their island governments to meet the SDGs. More specifically, our research tests the hypotheses that the degree of sovereignty, population size, and income levels all have an influence on the importance attached to the SDGs and the success by governments in meeting the targets. As we undertake this analysis, we are aware that SIS, SIDS, and SNIJs may exhibit different characteristics that affect their development and sustainability initiatives. While we respect these distinctions in the analysis and the literature review which follows, much of the literature on these types of islands can be considered complementary.

We aim at closing a knowledge gap and contributing to a growing debate in island studies to understand the characteristics, and potentially determining factors, which shape public perception of success in achieving SDGs. The chapter adopts a quantitative approach by using correlation analysis, utilizing an original survey conducted in ten SIS, SIDS, and SNIJs. More specifically, we seek to determine if characteristics such as sovereignty, population size, and wealth can potentially help to interpret current gaps in policy implementation and the success by governments to meet their SDG targets.

This research contributes to the growing assessment in island studies literature over the impact of smallness — and remoteness — to democracy and policy processes (Corbett & Veenendaal, 2018; Lévêque, 2020), and economic (Briguglio et al., 2009), social (Baldacchino, 2005), and environmental (Moncada et al., 2018) development in islands and small states.

Structure of the chapter

The next section discusses all of the factors that, according to the existing body of knowledge, are believed to be conducive to the attainment of SDGs in SIS, SIDS, and SNIJs, while also presenting the current status in relation to SDG agendas in such islands. Public perceptions regarding the achievement of and the progress towards attaining SDGs in SIS, SIDS, and SNIJs are also discussed, including existing research gaps in this area, a feature which prompted our research. The research design and methods employed to test the hypotheses are then presented, with special attention given to the survey instruments used and the island contexts within which the research is undertaken. This section also notes several limitations encountered by the research, while offering suggestions on how to address these challenges. The chapter then provides a descriptive and bivariate analysis of the survey results, discussing them in light of the literature examined in the previous sections, and assesses the degree and relevance of sovereignty, population size, and income as characteristics that may explain the success by governments in meeting their SDG targets.

LITERATURE REVIEW

SIS, SIDS, SNIJs, and the SDGs

There are 58 SIDS recognized by the United Nations Department of Economic and Social Affairs (UN-DESA), 38 of which are full UN members, and an additional 20 SNIJs that are associate or non-UN members. SIDS are found throughout the oceanic world, including in the Caribbean Sea and the Pacific, Atlantic, and Indian Oceans, as well as the South China Sea. In addition to these sovereign island states and this initial group of 20 SNIJs, there are many more semi-autonomous islands that are incredibly important in the world by any measure (Stuart, 2009). Their roles and relationships with

mainland states varies considerably, and can include unions, constitutionally decentralized unions, federations, confederations, federacies, associated states, and overseas territories (Baldacchino & Milne, 2006). If we add the four remaining SIS (Iceland, Malta, Cyprus, and Singapore) to these lists, the number of sovereign and non-sovereign island entities represent a typical size in a global classification, while large states seem more "quirk and anomaly" (Baldacchino, 2008, p. 40).

Achieving the Sustainable Development Goals is a crucial policy objective for many SIS, SIDS, and SNIJs, both to comply with commitments taken within the international community but also to increase the general wellbeing of their citizens. This is a process that some SIS started from the moment they gained independence. For many SIDS, however, it started in 1994, when the first UN global conference on the sustainable development of SIDS was held in Barbados. One of the outcomes of this meeting was the creation of the Barbados Plan of Action (BPoA). This was followed by the 2005 Mauritius Strategy of Implementation (MSI), the 2010 MSI+5 outcome document, and the SIDS Accelerated Modalities of Action (SAMOA) Pathway adopted in 2014 during the Third International Conference on Small Island Developing States, all of which cemented the importance of achieving sustainable development for SIDS. More recent attempts to review the 2014 SAMOA Pathway include aligning the achievement of the objectives agreed to in the 2014 international SIDS conference to the 2030 Agenda for Sustainable Development, including monitoring the progress in the implementation of the SAMOA Pathway by looking at the SDGs and their target indicators.

MANY ISLANDS HAVE developed ecological, cultural, and societal features that distinguish them from mainlands.

The body of knowledge regarding SIS, SIDS, and SNIJs has gained significant traction in recent years, with an increasing amount of research, both conceptual and applied, focusing especially on how population characteristics and dynamics, as well as economic structure, act to influence the economic, political, social, cultural, and environmental trajectories of countries and communities alike (Baldacchino, 2018; Briguglio, 2018; Corbett & Veenendaal, 2018; Moncada et al., 2021a,b). Many islands have developed ecological, cultural, and societal features that distinguish them from mainlands. However, islands can also be incredibly diverse as a group. One can find low-lying, volcanic, and mountainous islands, cold and warm-water islands, as well as very wealthy and very poor islands (Randall, 2021a). Notwithstanding this diversity, there may be some underlying shared characteristics among islands, including inherent vulnerabilities due to small size and remoteness, which limit economies of scale (Briguglio, 1995), and lead to higher costs of living (Srinivasan, 1986), all of which may act as barriers to achieving the SDGs (Moncada & Bambrick, 2019; Mycoo, 2018; Shultz et al., 2019).

At the same time, many islands have developed resilient societies and economies. A substantial number of SIS, SIDS, and SNIJs have achieved a relatively high level of economic success, while maintaining strong and long-lasting democratic records (Corbett & Veenendaal, 2018). Three schools of thought have emerged to provide possible explanations for this duality of vulnerability and political-economic success. The first infers that small states are no different from larger ones in this profile (Anklesaria Aiyar, 2008; Easterly & Kraay, 2000). The second argues that, although small states face inherent obstacles, they also hold intrinsic advantages, with the latter outweighing the former (Baldacchino & Bertram, 2009). The third school of thought posits that major economic challenges can be offset by appropriate economic policy (Briguglio et al., 2009). Regardless of whether small island states make use of what Baldacchino and Bertram (2009, p. 154) refer to as people's "resourcefulness," or adopt 'policy-induced measures' as suggested by Briguglio et al. (2009), there is a general consensus that external events such as pandemics and climate change can influence the ability of many SIS, SIDS, and SNIJs to build long-lasting resilience and strengthen individual, collective, and institutional responses to external shocks (Tandrayen-Ragoobur et al., 2021). However, this resilience building, especially the complexity associated with sustainable development resilience, may come at a high cost. In fact, per capita costs on islands are higher than in many larger states, putting small island governments at an initial disadvantage (Srinivasan, 1986).

RECENT EVIDENCE CONFIRMS that small states have been highly impacted by the COVID-19 pandemic, with mortality rates amongst the highest. However, many small island states have also demonstrated a capacity to respond promptly and to contain the spread of the virus.

Recent evidence confirms that small states have been highly impacted by the COVID-19 pandemic, with mortality rates amongst the highest (Randall, 2021b; Telesford, 2021; World Health Organization, 2021). However, many small island states have also demonstrated a capacity to respond promptly and to contain the spread of the virus, probably due to a mix of isolation and jurisdictional powers that have allowed them to govern their responses (Baldacchino, 2020). This seems to be confirmed when we compare regional performances vis-à-vis the COVID-19 pandemic. In fact, SIDS in the Caribbean have performed better than other mainland regions in Central and South America in containing the spread of the disease (Hambleton et al., 2020). Additional research has also confirmed that small population size and island status can prove advantageous in supporting public health measures to contain the spread of COVID-19 (Taglioni, 2020), while more relaxed tactics adopted by public authorities which favour short-term economic priorities have often resulted in higher transmission rates (Cuschieri et al., 2020). Understanding what type of response SIS, SIDS, and SNIJs adopt to shocks such as the COVID-19 pandemic can help us understand whether progress towards achieving the SDGs is still attainable.

Public perception of achievements by governments

In this context, it is important to understand the public perception toward SDGs that exist in SIS, SIDS, and SNIJs in order to design and communicate policy tools to strengthen SDG actions. Public awareness and support of the SDGs play a crucial role in their implementation. It is also vital to understand public attitudes towards SDGs to facilitate and encourage public engagement in SDG actions.

Research suggests that public opinion constitutes an important factor when governments decide to adopt or design policies (Gamson, 1989; Goldstone, 1980; Rohrschneider, 1990). The degree to which public perception is able to influence policy development varies considerably, ranging from very substantial (Stimson et al., 1995) to keeping the policy "in check" (Jones, 1994, p. 238). Literature on the impact of public perception on the adoption of sustainable development policies is scarce and fragmented, and it has focused primarily on the environmental dimension of sustainable development (Tandrayen-Ragoobur et al., 2021). What we do know, however, suggests that pro-environmental public opinions can encourage the adoption of environmentally friendly policy, while hostile public attitudes can be a key obstacle to any change (Dasgupta & De Cian, 2018).

WHAT WE DO KNOW, however, suggests that pro-environmental public opinions can encourage the adoption of environmentally friendly policy, while hostile public attitudes can be a key obstacle to any change.

The combination of participatory policymaking, science, and the views of experts, together with a proactive inclusion of public opinion, can be critical to understanding how to initiate, or continue, trajectories for the attainment of SDGs (Randall, 2021b; UN, 2019). In this regard, when compared to the Millennium Development Goals (MDGs), the SDGs appear to take a more inclusive approach, actively involving various stakeholder groups, and accounting for all views and opinions to make the commitments long-lasting (Bidarbakhtnia, 2020; Caballero, 2019).

The overall capacity for countries and their populations to meet the SDGs may depend on more than the support and trust that the public shows towards their governments. In fact, other factors such as the wealth of a jurisdiction, their degree of decision-making autonomy, and characteristics such as the size of the population and the economy may also affect outcomes. In this regard, the importance of being a small jurisdiction and being sovereign (Corbett & Veenendaal, 2018; Lévêque, 2020), achieving a certain level of economic development (Briguglio, 1995; Briguglio et al., 2009; Glass & Newig, 2019), having strong social relations (Baldacchino, 2005), and environmental standards (Moncada et al., 2021a,b) are also critical. However, there remains a gap in trying to assess the role played by public opinion on the degree of success, or otherwise, of government authorities to achieve SDGs, and the degree to which that

role is shaped by sovereignty, population, and wealth. The SDGs offer an opportunity for governments to design and implement public policies to foster equity, inclusion, and cohesion. It is important, therefore, for both developed and developing nations to engage citizens and incorporate public opinion in the policymaking process (Tandrayen-Ragoobur et al., 2021).

It is in this area that we seek to identify whether island characteristics such as sovereignty, population size, and wealth can help us interpret current gaps in policy implementation and the success by governments in meeting their SDG targets. This research endeavours to fill these gaps, with a focus on 10 island jurisdictions.

METHODS, DATA, AND CONTEXT

This research seeks to use the extant literature on islands and small states to aid in reaching the goals associated with the SDGs by 2030. At this stage we are not attempting to establish causation but rather to assess the strength of associations between public perception on governments' success in achieving the SDGs, taking into account independent variables such as sovereignty, population size, and wealth. This should be considered an intermediate step in a more comprehensive study that would use mixed methods, including quantitative regression analysis and interviews with relevant stakeholders to establish causality.

Correlation is being used in this research to test the relationships between variables, that is a measure of how phenomena are related. To put a value to this relationship, we use a correlation coefficient, which measures the strength of the relationship between two variables and ranges between –1.0 and +1.0. A value of zero means that there is no relationship between the variables at all, while –1.0 or +1.0 means that there is a perfect negative or positive correlation, respectively. Understanding that relationship is useful because we can use the value of one variable to predict the value of the other variable. Therefore, the greater the absolute value of the correlation coefficient, the stronger the relationship. Furthermore, we generally calculate a p-value to the correlation analysis, attributing to that result a statistical significance that can rule out errors by chance in interpreting the correlation between variables. In this research, all the results are statistically significant at the 95% confidence level, leaving out those statistical relationships that have a margin of error at the generally accepted threshold of 5%.

Surveys and data

An online survey was administered by local research team members on twelve islands, ten of which are represented in this analysis. Consisting of roughly 20 closed-ended Likert-type scaled questions, the surveys were divided into sections consisting of 1) perceptions regarding the performance of island institutions, such as the civil service, the judiciary, and local and island-wide governments; 2) the importance of the SDGs

and the success of island governments in meeting those goals; and 3) the personal actions taken by the participants in incorporating the SDGs into their everyday lives. In addition, most local island researchers included an additional set of questions that focused on perceptions regarding sustainable tourism management on their islands. Island researchers targeted participants from six stakeholder groups: representatives from non-governmental organizations, academics, youth, government workers, businesspeople/entrepreneurs, and members of worker or trade unions. Responses were gathered across the islands over a period of approximately two months, with some island research teams gathering data as early as July 2019 with others finishing as recently as December 2021. Although the language of the surveys was usually English, in order to meet the needs of the local communities and increase response rates, the survey was also administered in French, Greek, and Icelandic where appropriate.

As noted above, we took into account three variables often posited within the islands and small states studies literature as being important within the context of island sustainable development and, by extension, the SDGs. The first is sovereignty. Although sovereignty can be a complex concept, here we divided the ten case study islands between those that the United Nations recognizes as sovereign or independent states (Class 1), and those that are subnational island jurisdictions (Class 0). The second variable is population, represented by dividing the 10 case study islands into three broad categories: those in the lowest quartile (up to 114,290 people — Class 1), those between 25% and the median (273,880 people — Class 2), and those with populations greater than the median (Class 3). For the income or wealth variable, we used Gross Domestic Product (GDP) per capita, and the 2018 World Bank data in US$ equating national and island GDPs where island data were not available (i.e., Prince Edward Island and Newfoundland), except for Réunion and Lesvos, where we used 2018 data from EUROSTAT in Euros, which were converted to US$ using the equivalence of €1 = US$1.21 (as at 21 February 2021). As with the population variable, we used the first quartile ($11,483) and median GDP ($23,721) to establish three classes: Class 1 (GDP/capita less than $11,483), Class 2 (GDP/capita between $11,483 and $23,720), and Class 3 (GDP/capita greater than $23,720). Table 3.1 illustrates some key characteristics of the ten case study islands and the three variables of interest used to test our hypotheses.

Context

Using a pairwise comparative approach, six pairs of small island states and subnational island jurisdictions were selected for the research in the larger Sustainable Island Futures project, of which this is a part. Although every island is unique, the pairs were selected on the basis that they shared at least several of the following characteristics: population size, colonial or post-colonial history, geographical region, economic

TABLE 3.1: **Overview of Key Characteristics of the Case Study Islands**

Islands	Population	Total Area (KMZ)	GDP (per capita)	Participants (#)	Population Class	GDP Class	Sovereignty
Tobago	60,874	5,131.00	17,038.00	51	1	2	0
Grenada	112,523	348.50	10,808.70	56	1	1	1
PEI	159,713	5,660.00	46,194.70	118	2	3	0
St. Lucia	183,627	617.00	11,611.40	54	2	1	1
Lesvos	114,880	1,633.00	19,582.50	60	1	2	0
Cyprus	1,207,359	9,251.00	27,858.40	42	3	3	1
Newfoundland	479,538	108,860.00	46,194.70	109	3	3	0
Iceland	364,134	103,000.00	66,944.80	67	3	3	1
Reunion	859,959	2,511.00	28,666.18	57	3	2	0
Mauritius	1,271,768	2,040.00	11,099.20	57	3	1	1

Source: Eurostat, 2020; World Bank, 2018.

structure, and area size. The islands are located in the North Atlantic and Indian Oceans and the Caribbean and Mediterranean Seas. Two islands located in the Pacific Ocean (Guam and Fiji) participated in the study but are not included in this analysis.

The architecture of homes by the lakeside in Reykjavik, Iceland.

Limitations of the research methods

Establishing causation would support policy more effectively in the adoption of measures that could eventually lead to achieving SDGs in a shorter timeframe. However, the intention of the research presented here is to assess the existence of associations between public perceptions on government success in achieving the SDGs, and relevant independent variables such as sovereignty, population, and income level. Taking this approach does not come without limitations. This study is a first and a necessary step in a more comprehensive research agenda that could potentially use mixed methods, including quantitative regression analysis and interviews of key informants in order to be more confident about causality. The identification of significant levels of association between variables by isolating specific categories can still provide a useful first step into further research in this field.

RESULTS AND DISCUSSION

Description of results

Table 3.2 shows the aggregate results for the perceived importance assigned to each of the SDGs by all of the study participants across all ten islands, where the lowest mean

TABLE 3.2: **Importance of SDGs on Case Study Islands**

SDGs	Observations	Mean	Std. Dev.
SDG1 (No Poverty)	556	2.34	1.82
SDG2 (No Hunger)	556	2.12	1.68
SDG3 (Good Health & Wellbeing)	556	1.95	1.45
SDG4 (Quality Education)	556	2.01	1.53
SDG5 (Gender Equality)	556	2.10	1.60
SDG6 (Water & Sanitation)	556	1.99	1.52
SDG7 (Affordable & Clean Energy)	556	2.07	1.53
SDG8 (Decent Work & Economic Growth)	556	2.06	1.56
SDG9 (Industry Innovation & Infrastructure)	556	2.20	1.50
SDG10 (Reduced Inequalities)	556	2.65	1.91
SDG11 (Sustainable Cities & Communities)	556	2.28	1.58
SDG12 (Responsible Consumption & Production)	556	2.32	1.75
SDG13 (Climate Action)	556	2.07	1.64
SDG14 (Life below Water)	556	1.89	1.49
SDG15(Life on Land)	556	2.03	1.57
SDG16 (Peace, Justice, Institutions)	556	2.22	1.67
SDG17 (Partnership for Goals)	556	2.60	1.86

NOTE: On a Likert-type scale, these values range from 1 to 7 where 1 equals "Absolutely critical" and 7 is "Not important at all". Source: Compiled by authors.

values (in green) are of greatest perceived importance and the highest mean values (in red) are considered least important. The most important perceived SDGs, in rank order, are *life below water* (SDG 14), *good health and wellbeing* (SDG 3), and *water and sanitation* (SDG 6). At the other extreme, the SDGs that are considered to be least important are *reduced inequalities* (SDG 10), *partnership for goals* (SDG 17), and *no poverty* (SDG 1).

The parallel question, where survey participants were asked about the success of their governments in meeting the SDGs on their islands, is presented in Table 3.3. Once again, in rank order, participants felt that their governments had been most successful in achieving the Sustainable Development Goals of *quality education* (SDG 4), *water and sanitation* (SDG 6), and *gender equality* (SDG 5), and were least successful in achieving *responsible consumption and production* (SDG 12), *partnership for goals* (SDG 17), and *reduced inequalities* (SDG 10).

TABLE 3.3: **Perceived Success in Achieving SDGs on Case Study Islands**

SDGs	Observations	Mean	Std. Dev.
SDG1 (No Poverty)	556	4.56	1.70
SDG2 (No Hunger)	556	4.39	1.65
SDG3 (Good Health & Wellbeing)	556	4.20	1.65
SDG4 (Quality Education)	556	3.86	1.71
SDG5 (Gender Equality)	556	3.93	1.73
SDG6 (Water & Sanitation)	556	3.91	1.76
SDG7 (Affordable & Clean Energy)	556	4.34	1.78
SDG8 (Decent Work & Economic Growth)	556	4.62	1.66
SDG9 (Industry Innovation & Infrastructure)	556	4.47	1.61
SDG10 (Reduced Inequalities)	556	5.18	1.93
SDG11 (Sustainable Cities & Communities)	556	4.42	1.66
SDG12 (Responsible Consumption & Production)	556	4.85	1.67
SDG13 (Climate Action)	556	4.75	1.67
SDG14 (Life below Water)	556	4.58	1.74
SDG15(Life on Land)	556	4.61	1.76
SDG16 (Peace, Justice, Institutions)	556	4.48	1.81
SDG17 (Partnership for Goals)	556	5.02	1.96

NOTE: These values range from 1 to 7, where 1 equals "Extremely successful" and 7 equals "Extremely unsuccessful".

Source: Compiled by authors.

TABLE 3.4: **Correlation Between Perceived Importance of SDGs and Government Success in Achieving SDGs**

Sustainable Development Goals	Correlation Coefficients (p)
SDG1 (No Poverty)	0.122
SDG2 (No Hunger)	0.201
SDG3 (Good Health & Wellbeing)	0.154
SDG4 (Quality Education)	0.148
SDG5 (Gender Equality)	0.118
SDG6 (Water & Sanitation)	0.113
SDG7 (Affordable & Clean Energy)	0.052
SDG8 (Decent Work & Economic Growth)	0.071
SDG9 (Industry Innovation & Infrastructure)	0.139
SDG10 (Reduced Inequalities)	0.222
SDG11 (Sustainable Cities & Communities)	0.151
SDG12 (Responsible Consumption & Production)	0.181
SDG13 (Climate Action)	0.081
SDG14 (Life below Water)	0.053
SDG15(Life on Land)	0.093
SDG16 (Peace, Justice, Institutions)	0.155
SDG17 (Partnership for Goals)	0.224

NOTE: Correlation coefficients in green are statistically significant at the 95% confidence level.
Source: Compiled by authors.

A correlation analysis was conducted on the responses to the previous two questions, i.e., the association between perceived importance of the SDGs and success of governments in achieving the SDGs. Table 3.4 shows where there is a positive and statistically significant correlation (95% and above; presented in green in the table) between these two variables. The only two SDGs that were not highly correlated are *affordable and clean energy* (SDG 7) and *life below water* (SDG 14). However, the picture changes when we disaggregate the correlations according to the specific independent variables.

TABLE 3.5: **Correlations Between Perceived Importance and Success at Achieving SDGs, by Governance Status**

Sustainable Development Goals	Correlation Coefficients (p)	
	SIS	SNIJs
SDG1 (No Poverty)	0.208	0.056
SDG2 (No Hunger)	0.301	0.131
SDG3 (Good Health & Wellbeing)	0.211	0.105
SDG4 (Quality Education)	0.185	0.121
SDG5 (Gender Equality)	0.161	0.089
SDG6 (Water & Sanitation)	0.181	0.066
SDG7 (Affordable & Clean Energy)	0.155	-0.01
SDG8 (Decent Work & Economic Growth)	0.137	0.023
SDG9 (Industry Innovation & Infrastructure)	0.244	0.071
SDG10 (Reduced Inequalities)	0.223	0.189
SDG11 (Sustainable Cities & Communities)	0.303	0.042
SDG12 (Responsible Consumption & Production)	0.209	0.173
SDG13 (Climate Action)	0.172	0.016
SDG14 (Life below Water)	0.091	0.037
SDG15(Life on Land)	0.082	0.099
SDG16 (Peace, Justice, Institutions)	0.145	0.152
SDG17 (Partnership for Goals)	0.125	0.248

NOTE: Correlation coefficients in green are statistically significant at the 95% confidence level.
Source: Compiled by authors.

In fact, if we disaggregate this correlation by the governance status of the islands (i.e., SIS versus SNIJ) we see that island states are much more likely to exhibit significant correlations between SDG perceived importance and government success, than is the case with the SNIJs (Table 3.5). All but two of the SDGs for island states have significant correlations at the 95% confidence level, while only eight of the 17 SDGs have statistically significant correlations between these two variables for the semi-autonomous islands.

TABLE 3.6: Correlations Between Perceived Importance and Success at Achieving SDGs, by Population Size

Sustainable Development Goals	Correlation Coefficients (p) Population Groups		
	Low	Medium	High
SDG1 (No Poverty)	0.175	-0.023	0.171
SDG2 (No Hunger)	0.254	-0.005	0.275
SDG3 (Good Health & Wellbeing)	0.129	0.057	0.208
SDG4 (Quality Education)	0.195	-0.008	0.203
SDG5 (Gender Equality)	0.142	-0.071	0.195
SDG6 (Water & Sanitation)	0.151	-0.039	0.175
SDG7 (Affordable & Clean Energy)	0.088	-0.061	0.082
SDG8 (Decent Work & Economic Growth)	0.167	-0.105	0.106
SDG9 (Industry Innovation & Infrastructure)	0.198	0.037	0.145
SDG10 (Reduced Inequalities)	0.128	0.174	0.306
SDG11 (Sustainable Cities & Communities)	0.151	0.087	0.185
SDG12 (Responsible Consumption & Production)	0.371	-0.018	0.154
SDG13 (Climate Action)	0.218	0.012	0.021
SDG14 (Life below Water)	0.151	-0.069	0.025
SDG15(Life on Land)	0.199	-0.068	0.119
SDG16 (Peace, Justice, Institutions)	0.326	-0.018	0.158
SDG17 (Partnership for Goals)	0.272	0.179	0.215

NOTE: Correlation coefficients in green are statistically significant at the 95% confidence level.

Source: Compiled by authors.

In Table 3.6, we correlate the same two variables (i.e., perceived importance of the SDGs and government success at achieving them), except that we are now differentiating on the basis of population size categories. The smallest and largest islands are much more likely to have statistically significant correlations across the 17 SDGs than are those islands that have medium population sizes. Only two of the SDGs (10 and 17) show significant correlations on these islands.

TABLE 3.7: **Correlations Between Perceived Importance and Success at Achieving SDGs, by Gross Domestic Product per Capita Categories**

Sustainable Development Goals	Correlation Coefficients (p) GDP Per Capita Groups		
	Low	Medium	High
SDG1 (No Poverty)	0.189	0.144	0.041
SDG2 (No Hunger)	0.292	0.219	0.099
SDG3 (Good Health & Wellbeing)	0.209	0.138	0.849
SDG4 (Quality Education)	0.158	0.212	0.063
SDG5 (Gender Equality)	0.028	0.166	0.073
SDG6 (Water & Sanitation)	0.161	0.117	0.071
SDG7 (Affordable & Clean Energy)	0.188	0.068	-0.042
SDG8 (Decent Work & Economic Growth)	0.161	0.124	-0.048
SDG9 (Industry Innovation & Infrastructure)	0.294	0.108	0.035
SDG10 (Reduced Inequalities)	0.249	0.112	0.262
SDG11 (Sustainable Cities & Communities)	0.281	0.063	0.117
SDG12 (Responsible Consumption & Production)	0.252	0.284	0.247
SDG13 (Climate Action)	0.292	0.088	-0.074
SDG14 (Life below Water)	0.082	0.097	-0.061
SDG15(Life on Land)	0.102	0.223	0.003
SDG16 (Peace, Justice, Institutions)	0.171	0.254	0.059
SDG17 (Partnership for Goals)	0.157	0.227	0.242

NOTE: Correlation coefficients in green are statistically significant at the 95% confidence level.
Source: Compiled by authors.

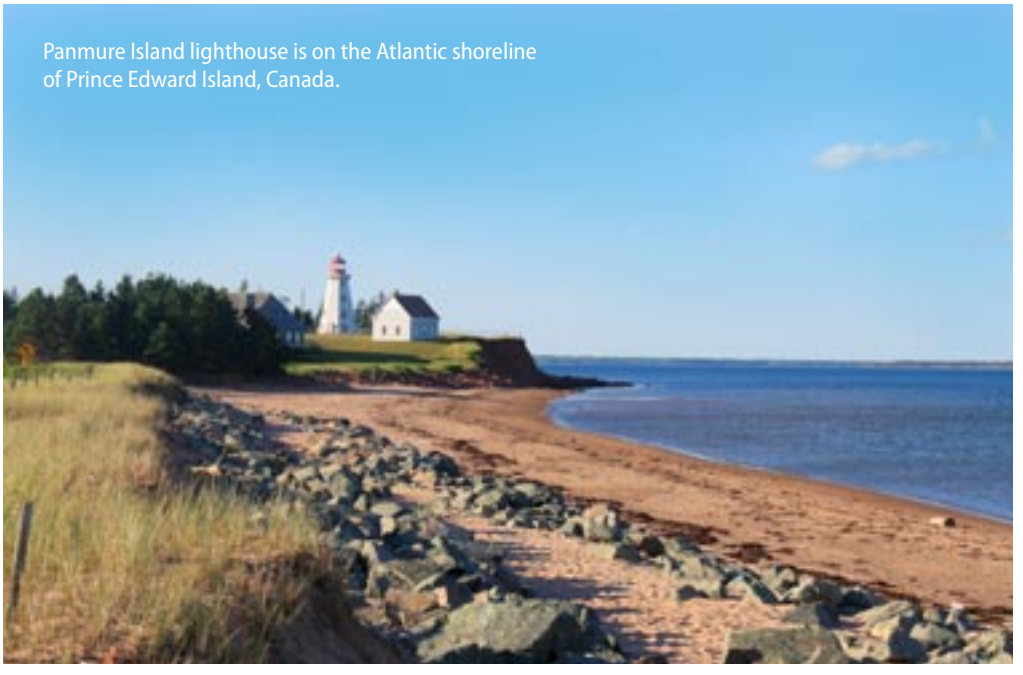
Finally, as seen in Table 3.7, participants on those islands with the lowest per capita incomes are more likely to show a significant correlation between perceived importance of the SDG and government success than is the case on medium and high-income islands. The differences between the low- and high-income islands is especially striking. Approaching this from an exploratory perspective, we need to begin to account for some of the outcomes portrayed in Tables 3.5–3.7.

DISCUSSION AND CONCLUSIONS

The quantitative results presented above clearly indicate that the characteristics of governance, income, and population size show positive and significant correlations between the variables of perceived importance and perceived government success at achieving the SDGs across the ten islands. One interpretation of the results in relation to governance as it is defined here (i.e., SIS versus SNIJ) may be that independent countries have more control over legislation, regulations, and the range of actions needed to address all aspects of the SDGs (Royle, 1989). In addition, while local/regional/state governments may have to rely on central governments for funding to support SDG initiatives, governments of independent states are able to allocate resources without approval of more senior or central governments (Guha & Chakrabarti, 2019). While this seems to suggest that island states would be more successful in achieving the SDGs, it runs counter to some island studies research which argues that many non-sovereign islands enjoy a relatively high degree of freedom in setting island-specific policy (Baldacchino, 2004; Baldacchino & Milne, 2009). Therefore, all other things being equal, politically dependent status does not preclude government effectiveness. Moreover, the nature of many SDGs makes them inherently local (e.g., SDG 11, *sustainable cities and communities*). In other words, for them to be successful, the actions must be designed and implemented at the subnational level (Reddy, 2016). It is at the local, small-scale level that key actors are able to come together, develop trust, and agree on a shared vision (Guha & Chakrabarti, 2019).

THEREFORE, ALL OTHER things being equal, politically dependent status does not preclude government effectiveness. Moreover, the nature of many SDGs makes them inherently local (e.g., SDG 11, *sustainable cities and communities*). In other words, for them to be successful, the actions must be designed and implemented at the subnational level.

Another feature that could allow us to better understand the results may be the greater awareness of the importance of the SDGs (and sustainable development in general) among the populations of small sovereign states, especially given their greater statuary responsibility and international transparency of the actions of these governments on the global stage (Hepburn, 2012). Unlike SNIJs, where SDG activity may be subsumed within the policy positions of the larger state, governments and populations of small island states and SIDS are much more conscious of the importance of the SDGs in achieving sustainable development (Quirk & Hanich, 2016). As noted earlier, this relationship is undoubtedly co-mingled with the factor of scale and the boundedness of small islands. Not only is the process of engaging and implementing the SDGs locally based, but local populations are also uniquely placed to see the impacts of unsustainable development on their local physical landscapes and on their own and their neighbours' households. It is not surprising, therefore, to



Panmure Island lighthouse is on the Atlantic shoreline of Prince Edward Island, Canada.

find a greater awareness of SDGs in small states and to see them occupying a more prominent role in small states' domestic and international policy agendas. Residents of SNIJs may be less likely to believe that their subnational governments are in a legitimate position to actually fully implement SDG actions, given the more limited range of legislative authority or access to sufficient resources on these semi-autonomous islands (Veenendaal, 2016). In other words, the lack of direct responsibility by some non-sovereign jurisdictions to be held accountable for the actions and targets related to the SDGS might create a sense of disengagement by the general public, thereby acting as a barrier to possible actions (Veenendaal, 2016).

The results in relation to relative income, suggesting that lower per capita income is associated with a stronger correlation between perceived importance and success at achieving the SGDs, may be a function of the 'catching up' theory (Dowrick & Nguyen, 1989). This suggests that in low-income places, there are larger margins to improve wealth gaps and increase standards of living, and more room for manoeuvring around policies (Maddison, 2013), including a possible greater visibility of any progress as perceived by citizens. This does not imply that those on developed islands are less likely to think that their governments are succeeding with the SDGs. However, it may suggest that there is a diminishing effect at the margins. This has been seen, for example, in research linking governance to a country's economic status (Briguglio et al., 2019).

While there are challenges in interpreting the results relating to population size categories, with the least and most populated places showing stronger correlations between perceived importance and perceived government success at achieving the

SGDs, one possible explanation may relate to social relations and social capital. As noted by Baldacchino (2005) and others, those living on small islands tend to have denser social networks. The stronger social and political bonds, especially within small communities with limited mobility, when combined with a tendency in internal political processes that is often personalistic (Corbett & Veenendaal, 2018; Lévêque, 2020), may lead to higher perceived success by governments in the ability to attain the SDGs.

This research has shed light on the perceptions and attitudes of island stakeholders towards the Sustainable Development Goals, with the aim of identifying critical factors that may help us to implement policies to achieve those goals. Notwithstanding the progress that has already been made in meeting key SDGs, especially in relation to reducing poverty, social, and gender inequalities, as well as improving access to education and health (Sachs et al., 2020), the literature suggests that there are still areas where progress has not been made, and where governments would benefit from evidence that allows them to better interpret public opinion. The results presented above suggest that sovereignty, low and high population size, and relative income may help to fill in explanatory gaps in policy implementation and aid governments in meeting their SDG targets. The results of this research also contribute incrementally to the growing literature in island studies, and specifically that which examines the impact of island population size and remoteness, to democracy and policy processes (Corbett & Veenendaal, 2018; Lévêque, 2020), to the level of independence of islands (Baldacchino & Milne, 2009), and to relative wealth (Prasad, 2003) of islands and small states.

Finally, this research also sheds light on the need for academia to take a more proactive position in achieving the SDGs. As noted by Oliveira and colleagues (2020), academics and researchers should do more than provide scientific knowledge and interpret data. They should also take a more normative position, promoting and supporting the SDG agenda, and advising government and community decision-makers in establishing SDG actions and monitoring progress. This is especially important in smaller island jurisdictions where the capacity of governments and NGOs to address the SDGs is already limited. Understanding the importance of an interdisciplinary, place-based perspective on achieving sustainable development, and recognizing the need to adopt locally based solutions, means that island studies scholars are well positioned to effect change within their communities.

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Eigg, a small island that is part of the Scottish Inner Hebrides, has generated worldwide attention for being almost energy independent through a careful mix of small-scale renewables, like this solar collector to heat household water, and for its community land ownership and energy planning.
isleofeigg.org

4

Islands, climate change, and net zero

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ABSTRACT

Climate change is one of the gravest threats to society but Small Island Developing States (or SIDS), and islands more generally, are amongst the least responsible for its current state. However, rather than focusing on island vulnerability to climate change, or adaptation and resilience, this chapter focuses on islands and climate change mitigation, exploring both the rationale for policies aimed at reducing greenhouse gas emissions and the possible content of island-specific net

*At the time of writing this chapter, Dr. Sindico was on secondment with the Scottish Government leading its Carbon Neutral Islands project. This chapter reflects his personal opinions and does not reflect in any way the position of the Scottish Government.

zero policy pathways. The chapter focuses its attention on SIDS, but also on semi-autonomous island territories, often referred to as subnational island jurisdictions or SNIJs. Scotland and its islands are also used to provide more context to the analysis. The chapter concludes that net zero–related good practices stemming from islands will not automatically apply to mainland settings but that, in some circumstances (especially transport and energy), the closed nature of islands lends them to be perceived as hubs of innovation capable of distilling learning from which mainland counterparts can also benefit.

INTRODUCTION

Science has made it very clear that anthropogenic-induced climate change is beyond doubt, and that the world has less than ten years to make serious changes in order to avert the most dangerous consequences of rising temperatures (Intergovernmental Panel on Climate Change [IPCC], 2021). It is also well-known that islands, and Small Island Developing States (or SIDS) in particular, barely have any responsibility at all for the greenhouse gas emissions that cause climate change (United Nations Framework Convention on Climate Change [UNFCCC], 2017). So why should islands focus on climate change mitigation, considering the negligible impact their emission reductions will have on the global challenge of climate change? Moreover, if they decide to act, how much action should they take in their climate change mitigation policies, and how should they implement such climate policies? This chapter explores these two questions and focuses on islands' climate change policies and their 'net zero' pathways. In order to provide a comprehensive geographical analysis, the scope of islands referred to will include the United Nations' recognized nation-states commonly labelled SIDS, as well as semi-autonomous island territories, often referred to as subnational island jurisdictions or SNIJs. The chapter will also pay special attention to the experience of the Scottish islands to support the arguments.

The chapter is divided into three sections followed by a set of conclusions. In the first section, the rationale behind islands' climate change policies will be addressed together with a discussion of the concept of 'net zero' vis à vis other climate target options. The second section will explore how SIDS are approaching climate change mitigation and adaptation in the context of the implementation of the Paris Agreement (United Nations, 2015). In the third section, a discussion will take place about how islands in general may be able to move towards a net zero outcome, highlighting the challenges and opportunities for other islands and for shaping mainland climate policies. This section will shed some further light on the climate change experience in the Scottish islands. The chapter will conclude by providing some cautionary observations about replicating "one-size fits all" island net zero policy pathways for other places.

ISLANDS, CLIMATE CHANGE, AND NET ZERO: A RATIONALE

Climate change (mitigation) and islands

This section will address the rationale behind islands' climate change mitigation policies, as well as a discussion of the concept of net zero emissions vis à vis other climate target options. Climate change adaptation is equally as important — and, for most islands, probably more important — but is often not directly linked to net zero policies. The chapter will, however, discuss adaptation in an island context in the coming sections. By net zero, this chapter refers to:

> "targets [that] suggest[s] a state in which an actor achieves a balance of carbon dioxide emissions and removals — using either natural sinks, such as reforesting land or adopting agricultural best practices, or a technological solution, such as carbon capture and storage." (New Climate Institute & Data-Driven EnviroLab, 2020, p. 8)

A BETTER AND FAIRER APPROACH is to consider islands, and SIDS in particular, through the lens of adaptation and resilience rather than vulnerability.

In his address to COP26 delegates, the former American President Barack Obama referred to islands (and islanders) as the "canaries in the coalmines" (Zak, 2021). Of course, this is not the first time this metaphor has been used in reference to small islands and climate change (Hanna & McIver, 2014), with some commentators criticizing the trope regarding which islands would be inherently vulnerable when it comes to climate change (Benwell, 2011; Grydehøj, 2014; Kelman & Khan, 2013; Mallin, 2018). Many suggest that a better and fairer approach is to consider islands, and SIDS in particular, through the lens of adaptation and resilience rather than vulnerability (Teng, 2019). However, because of the small size and close connection to the sea, it is not surprising that islanders may be the first to notice the negative and often tragic effects of climate change, such as sea level rise and the increase in frequency and intensity of extreme events like hurricanes (Johnston, 2014). If we temporarily ignore the larger, more populated island nations (such as the United Kingdom, Japan, or Indonesia), islands, and especially those that are developing, contribute only 0.5% of global greenhouse gas emissions (UNFCCC, 2017). This imbalance raises moral (climate justice) and practical challenges for islanders when it comes to climate change (Teng, 2019). Particularly, why take any locally based mitigation efforts if the outcomes of those efforts contribute little or nothing to solve the global problem of reducing greenhouse gas emissions? To clarify: the increase in atmospheric temperature is caused primarily by the release of a set of greenhouse gases in the atmosphere. These stem from a number of anthropogenic activities, including energy generation, industrial activities, transport, agriculture, and waste (IPCC, 2021). When absolute emissions are measured

by country, the United States, the European Union, China, India, and Brazil are the largest emitters. According to some studies, "about 60% of GHG [greenhouse gas] emissions come from just 10 countries, while the 100 least-emitting contributed less than 3%" (ClimateWatch, 2021, n.p.).

Given this imbalance in cause and impact, the rationale for an island and its policy makers to put forward an ambitious climate change policy is twofold. First, island decision-makers may want to develop an ambitious climate policy to show leadership by example and attract international funding (Dornan & Shah, 2016). By developing and implementing a substantive climate policy agenda, islands are able to maintain moral pressure on the international community (Teng, 2019). The Maldives are a good example of an island state showing climate leadership and putting pressure on the international community. In its updated Nationally Determined Contribution (NDC), the Maldives maintained that it will strive to reach net zero by 2030 (Maldives Ministry of Environment, 2020). Another good example — although not focused on economy-wide net zero — comes from Cape Verde, whose government stated a pledge to produce 100% of its electricity from renewable sources by 2025 (Nordman et al., 2019).

President Ibrahim Mohamed Solih states that Maldives can reach net zero emissions by 2030 with international support.

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Although not linked directly to a significant environmental outcome, there is a second, more practical rationale for engaging in an aggressive climate change mitigation agenda through long-term strategies. By slowly but steadily becoming energy independent, islands are able to decrease their reliance on imported fossil fuels. This was the main reason Iceland started to move away from imported oil and gas (Logadóttir, n.d.). In writing their own (renewable) energy story, islands may also achieve an indirect goal of attracting investment and creating jobs. By transitioning away from fossil fuels, energy independence and its social and economic co-benefits may encourage island residents to stay and attract others to migrate to their island (Attard et al., 2021; Robertson, 2018). One jurisdiction that is moving in this direction is Scotland through the Carbon Neutral Islands project, whose aim is to "demonstrate the low carbon energy potential of Scotland's islands as hubs of innovation in renewable energy and climate change resilience, whilst positively impacting on island economies and population retention and growth" (Scottish Government, 2021a, para. 3).

Net zero and other climate targets

For many years, the threshold temperature increase that would constitute a dangerous climate change was unclear. In article 2, the United Nations Framework Convention on Climate Change (UNFCCC) maintains that the goal of the Convention is to prevent dangerous climate change, but it does not specify what that means (United Nations [UN], 1992). It was only with the 2015 Paris Agreement that, for the first time, a temperature threshold from pre-industrial times was included. States have now agreed in article 2 of the Paris Agreement that their collective efforts must avoid anything greater than a two-degree Celsius increase from pre-industrial levels and, where possible, that global efforts should strive to limit the increase to 1.5 degrees Celsius (UN, 2015). One of the key phrases repeated during the Glasgow COP26 conference was to "keep 1.5 alive" (Carrington, 2021). The IPCC clarifies that, to limit global temperatures to an increase of 2 degrees Celsius from a 2010 baseline, global emissions would first have to decrease 45% by 2030, followed by net zero by 2050 (IPCC, 2021). More importantly, deep and negative emissions reductions would need to take place well beyond 2050 if the world wishes to be more ambitious and meet the 1.5 Celsius target.

THE TERM 'CLIMATE POSITIVE' takes climate change policy one step further and, in this case, a positive target is set whereby a certain amount of greenhouse gases will be removed from the atmosphere for the target to be met. This differs from net zero in that the starting point is zero emissions.

Against this background, when referring to 'net zero', there are three key sets of challenges that islands should also take into account in the long, medium, and short term. In the long term, net zero is not the only possible emission reduction target (de Andrade Correa & Voigt, 2021; New Climate Institute & Data-Driven EnviroLab, 2020) and, from a climate change perspective, is not the appropriate goal. Beyond 2050, countries (including islands) should consider zero emissions and climate positive targets. Zero emissions implies a climate change policy according to which sinks are not counted towards meeting the target, and the latter will only be met when no greenhouse gas emissions are accounted from a certain territory. The term 'climate positive' takes climate change policy one step further and, in this case, a positive target is set whereby a certain amount of greenhouse gases will be removed from the atmosphere for the target to be met. This differs from net zero in that the starting point is zero emissions, after which additional efforts related to sinks are required.

In the medium term, net zero presents a challenge if it is not accompanied by shorter, incremental climate targets and monitoring. Countries that only adopt 2050 net zero targets without holding themselves accountable to implement clear incremental strategies and emission reduction goals will find it difficult to achieve the longer-term goal. The Neubauer case in Germany (London School of Economics and

Political Science, 2021) reaffirmed the importance of having intermediate steps that are tangible and that can be monitored. The German Federal Constitutional Court concluded that the German government was breaching the Constitution by not setting clear enough targets between 2030 and 2050 (Bäumler, 2021).

In the short term, net zero can also present equity issues if international offsets are abused. As a reminder, 'net zero' implies a balance between the greenhouse gas emissions present in the atmosphere and the greenhouse gas emissions that are captured via sinks (e.g., in forests, oceans, peatbogs, etc.). A challenge with net zero is that it could imply that emissions, and the current industrial model that depends on it, can continue unchecked so long as we can rely on nature-based solutions or, in the longer term, with new carbon-capture technologies capable of capturing and storing large amounts of greenhouse gases. A further challenge can stem from countries whose climate change policies include international offsets whereby domestic net zero is achieved by means of investing in "green" projects in developing countries. From a global climate change perspective, the idea of reducing emissions where it is least expensive may seem an economically feasible option. However, the Paris Agreement and the IPCC make it clear that, in the longer-term, net zero is not enough, and civil society in many developed countries want their own governments to meet their historical climate responsibility domestically rather than "buying their way out" through international offsets (Calnek-Sugin, 2020; Streck & von Unger, 2016). The latter are allowed by the Paris Agreement, and COP26 has concluded the rules that will allow them to operate in the context of the implementation of countries' NDCs (UNFCCC, 2021a). Safeguards to prevent abuse and to ensure the environmental integrity of offsets and carbon markets related thereto have been included, but still some observers have reservations (Amazon Watch, 2021; Louw, 2021; Rogerson, 2021).

A CHALLENGE WITH NET ZERO is that it could imply that emissions, and the current industrial model that depends on it, can continue unchecked so long as we can rely on nature-based solutions or, in the longer term, with new carbon-capture technologies capable of capturing and storing large amounts of greenhouse gases.

Overall, net zero is what most countries are considering and what many islands refer to in their climate change policies. However, net zero is not enough to achieve the temperature threshold targets in the long term. It requires stringent and clear timetables that can be monitored. Ultimately, difficult questions about equity in the use of offsets need to be carefully considered.

SIDS AND THE PARIS AGREEMENT

This section explores how SIDS in particular are approaching climate change mitigation and adaptation in the context of the implementation of the Paris Agreement (Hoad, 2016; Ourbak & Magnan, 2018).

The Paris Agreement

The Paris Agreement was adopted in 2015 and entered into force in 2016 (Bodansky et al., 2017; Klein et al., 2017; UN, 2015). After five years, the Paris Rulebook, a series of COP Decisions aimed at operationalizing specific provisions of the Paris Agreement that required further negotiations, was concluded at COP26 (UNFCCC, 2021a,b,c,d,e). The Paris Agreement is a bottom-up international legal framework that brings all countries of the world together, but provides them with a degree of flexibility in how to deal with climate change. By signing the Agreement, a country obliges itself to prepare, submit, and maintain an NDC, as spelled out in article 4 of the Paris Agreement (UN, 2015). An NDC clarifies the country's climate change target and lays out the key policies that it will develop to meet its target. Countries often have to put the NDC into domestic legislation for it to carry normative weight domestically. Collectively, the NDCs are intended to prevent dangerous climate change, which, as highlighted earlier, is now understood as limiting global temperature to not more than 2.0 degrees Celsius from pre-industrial times and, where possible, aiming at 1.5°C. NDCs should include a country's climate change policy in the context not only of mitigation, but also adaptation and, where applicable, climate finance. One of the key aspects of the Paris Agreement is that every five years countries are asked to come up with a new, improved NDC. Furthermore, from 2023 and every five years thereafter, a Global Stocktake will be completed which reviews global efforts to deal with climate change in light of the best available science. An interesting development coming out of the COP26 meeting in Glasgow, Scotland (2021) is acknowledgment by countries that setting 2040 or 2050 targets can be irrelevant if not accompanied by stringent and clear timelines between now and 2030. In this respect, the Glasgow Pact "requests Parties to revisit and strengthen the 2030 targets in their nationally determined contributions as necessary to align with the Paris Agreement temperature goal by the end of 2022, taking into account different national circumstances" (UNFCCC, 2021f, para. 29). The non-legally binding nature of the Glasgow Pact and the complexity in upgrading and updating 2030 targets in just one year may lead to many countries not being able to comply with this request. However, the message

AN INTERESTING DEVELOPMENT coming out of the COP26 meeting in Glasgow, Scotland (2021) is acknowledgment by countries that setting 2040 or 2050 targets can be irrelevant if not accompanied by stringent and clear timelines between now and 2030.

coming out from Glasgow's COP26 is clear: more swift and incremental action is needed in order to deal with climate change effectively.

Overall, the global fight against climate change is housed primarily, but not only, in the Paris Agreement. The latter is an international treaty with no expiry date. Countries needed six years to finish all the specific rules that will allow the Paris Agreement to start operating properly. In this respect, it may be analogous to a machine that needs more parts to operate most effectively. After COP26, it now has those additional parts. The Glasgow Pact, and any future Conference of the Parties decisions, will not replace the Paris Agreement. Future actions may encourage countries to steer the machine in a slightly different direction, but the overarching course set in Paris in 2015 remains.

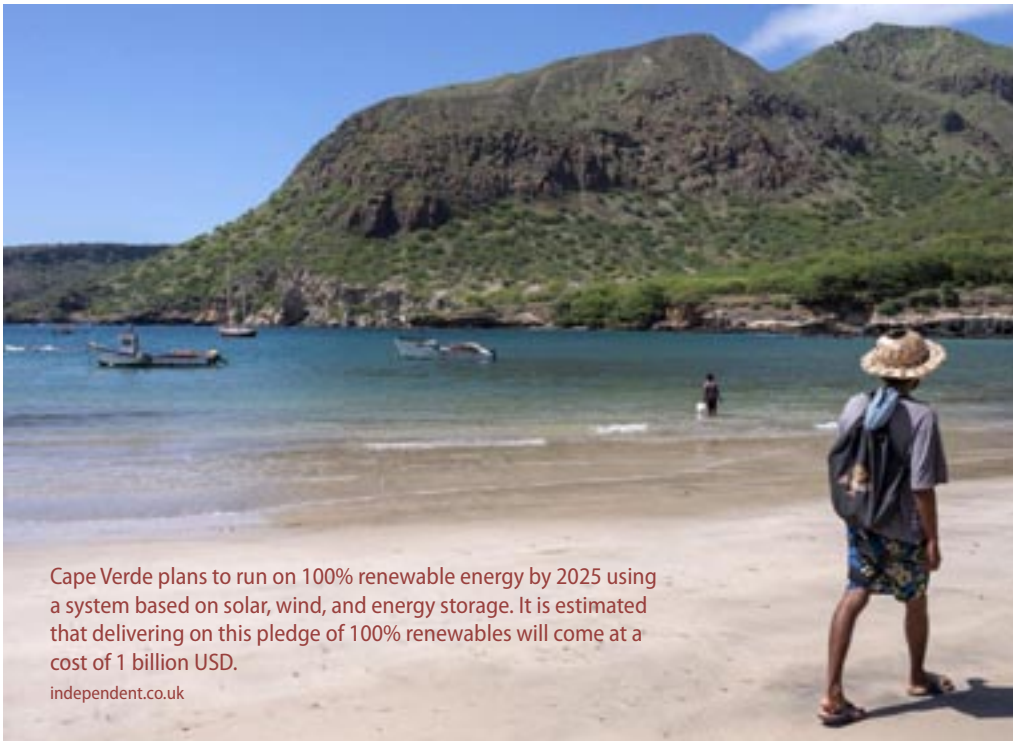
SIDS and implementation of the Paris Agreement

The Paris Agreement is not just about climate change mitigation. It also includes provisions regarding climate change adaptation, climate finance, and, crucially for SIDS, loss and damage. As mentioned before, even with the most ambitious climate policies, small island states will still suffer the greatest negative impacts of climate change. While this does not justify inaction, it does mean that SIDS interest in the implementation of the Paris Agreement falls primarily in three key areas: adaptation, climate finance, and loss and damage.

IN MANY CASES, ADAPTATION is about good governance, planning, and working together with nature. There can still be cases when it comes at a high cost. To that end, climate finance is crucial for many SIDS that wish to implement ambitious climate policies.

SIDS will need to adapt to climate change (Klöck & Fagotto, 2020; Klöck & Nunn, 2019; Robinson, 2020). A global goal on adaptation has now been agreed and climate finance has been readjusted to consider not only mitigation and transfer of technology, but also climate change adaptation (Robinson & Dornan, 2016; UNFCCC, 2021f; Wilkinson et al., 2021). Despite the fact that, in many cases, adaptation is about good governance, planning, and working together with nature, there can still be cases when it comes at a high cost.

To that end, climate finance is crucial for many SIDS that wish to implement ambitious climate policies (Canales et al., 2017; Samuwai, 2021; Scandurra et al., 2020). One of the key challenges for all islands in implementing net zero policies is cost. Transforming an island from a fossil fuel-dependent society to an island framed around renewable energy sources will be a costly exercise. For example, in the small archipelago of Cape Verde, situated off the west coast of Africa and with a population of not much more than 550,000 people, it has been estimated that delivering on its pledge of 100% renewables will come at a cost of 1 billion USD (Nordman et al., 2019). Developed countries had promised developing countries $100 US billion a year in climate finance



Cape Verde plans to run on 100% renewable energy by 2025 using a system based on solar, wind, and energy storage. It is estimated that delivering on this pledge of 100% renewables will come at a cost of 1 billion USD.
independent.co.uk

starting in 2020. This target has been missed and negotiations for a new collective quantified goal on climate finance were launched at COP26 (UNFCCC, 2021g). A key challenge when it comes to 'climate finance' is agreeing on the definition of the term itself (Colenbrander et al., 2018). In other words, is it public money and, if so, how does it differentiate from aid money? Or is it also private money and, if so, how can countries leverage such large sums of private money (Lundsgaarde et al., 2018)? If it is private money, are these just grants, or will the private investor want something in return? In other words, does acquiring climate finance come with obligations? While all of these are real and challenging problems for SIDS, loss and damage has developed into a self-standing issue for SIDS (Benjamin et al., 2018; Handmer & Nalau, 2019; Thomas & Benjamin, 2018).

Loss and damage can be defined as "the actual and/or potential manifestation of impacts associated with climate change in developing countries that negatively affect human and natural systems" (Rajamani, 2015, p. 17; see also McNamara & Jackson, 2019). Within the Paris Agreement, SIDS were able to secure a specific provision for loss and damage due to climate change (UN, 2015, art. 8), hence separating it from both adaptation and climate finance. Loss and damage is more than just adaptation in that it also refers to those instances that are sudden and/or are caused by extreme climate events. It differs from climate finance because it could provide a more agile and immediate stream of finance when it is needed. While embedding loss and damage within the

Paris Agreement may have been an achievement, from the perspective of SIDS it was less of a success in how it was to be operationalized (Broberg & Martinez Romera, 2020). Developed countries were also able to include a "firewall" provision in the COP Decision that accompanies the Paris Agreement according to which countries cannot be held liable for climate change damages (UNFCCC, 2016, para. 51). In other words, jurisdictions such as the USA or the European Union wanted to be sure that SIDS would not sue them for their historical climate change responsibility and require them to pay compensation for the loss and damage which SIDS had incurred (Adelman, 2016). Interestingly, this heated discussion around loss and damage has not been resolved and was once again centre stage at COP26 (Dimsdale, 2021). As was the case with earlier climate conferences, AOSIS (i.e., the Alliance of Small Island States) was not able to get what they wanted during the negotiations, but they clarified that at future Conferences of the Parties they would continue to pursue their loss and damage strategy (Wilkinson & Tanner, 2021). With the Paris Rulebook completed and less to be negotiated overall, it remains to be seen whether the discussions around loss and damage will become a dominant area of future negotiations.

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In conclusion, more elements of the Paris Agreement are still to be implemented. For SIDS this means that, in addition to NDCs and, apparently, the annual review of pre-2030 efforts, the international legal machinery around adaptation, climate finance, and loss and damage will become increasingly relevant. SIDS need to fully understand the complexity of the Paris Agreement machinery and leverage funding and other opportunities to support their net zero policies. International initiatives such as the SIDS Lighthouses Initiatives, coordinated by the International Renewable Energy Agency (IRENA) and designed to transition SIDS from fossil fuels to renewable energy sources, is an example of an initiative that starts to achieve these goals (International Renewable Energy Agency, 2021).

CHALLENGES AND OPPORTUNITIES FOR ISLAND NET ZERO POLICIES

This third section discusses how islands in general can move towards net zero, highlighting challenges and opportunities. This section will also analyze the extent to which island net zero pathways may provide an example for mainland climate policies. Throughout this section, and especially in terms of implementation, the chapter will use the experience of islands in Scotland.

Islands' net zero pathways

Emission baseline

The first step in designing a net zero policy pathway for any jurisdiction is to understand the climate change circumstances at that place. In other words, policy makers and community stakeholders need to develop an emissions baseline. In addition to not being able to manage, or regulate, what you do not know, without an emissions baseline scenario it is impossible to track progress towards the net zero target during its implementation process.

Before carrying out the emissions baseline exercise, some difficult but key issues need to be considered. First, what kind of emissions will be included? Emissions are usually categorised as Scope 1, 2, and 3. Scope 1 and 2 can be framed as territorial, meaning that they relate to emissions generated on the island and for which island decision-makers have more direct control. Island-based industry or land use related emissions would fall under these categories. Scope 3 emissions are consumption-based and relate to products or services that are consumed on the island but whose production takes place elsewhere. Within the Scope 3 category, emissions generated in the production of a product are included in the baseline of the consumption location. Emissions related to the generation of imported agricultural products (e.g., fruit and vegetables) fall under Scope 3. This is a progressive methodology as it places the onus on individuals' daily choices. However, by doing so, it can eschew the climate change geopolitical picture that is predominant in the international climate change legal regime, which is centred on production-based emissions.

A second very challenging issue relates to transport, a key sector on many islands, and includes carbon produced by ferries and planes. For many islands, transport is essential to maintain the population — as an economic driver, and as a way to attract tourists and maintain links to the outside world for residents (Karampela et al., 2014). Which, if any, transport-related emissions should be included in the emissions baseline? Take, for example, a ferry that transports people and goods between a mainland and an island. In this hypothetical scenario, to what degree should the emissions generated by mainlanders taking the ferry to and from the island be included in the island emissions baseline?

Decisions regarding the types of emissions to include and how to calculate transport-related emissions are crucial to allowing an island to succeed or fail in achieving its net zero pathway. Island governments and decision-makers should be the ones making such decisions, albeit with the necessary input from the island population at large.

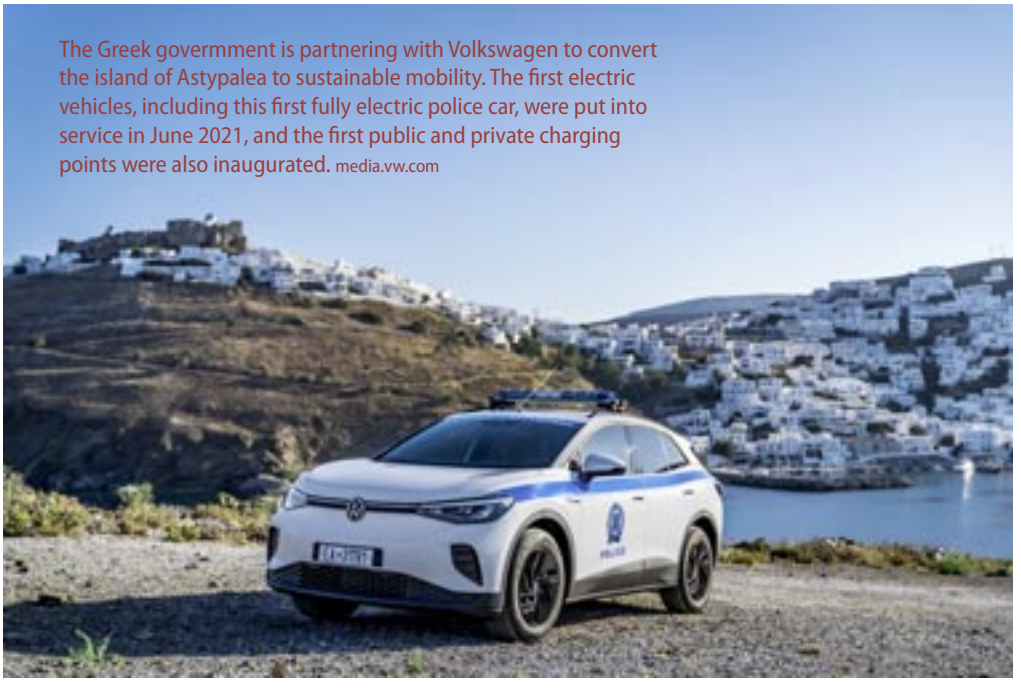
Implementation

Once an island emissions baseline is calculated, the next stage is implementation. It is at this stage that the input of the island community becomes crucial for the overall success of the net zero policy pathway. If the plan for net zero is dictated from abroad, or is predetermined by central decision-makers with little input from local residents, or is even driven by external donors, the island community may contest the legitimacy of the overall net zero trajectory. The island community can, and should, be part of the discussion on how to achieve a net zero outcome (Pacheco et al., 2022), with island governments providing resources and information to allow the community to better understand the net zero context. Islands such as Barra and Vatersay in the Scottish Outer Hebrides have developed or are developing community-based climate change plans in an attempt to keep the input of island residents at the forefront of their climate change journey (Barra and Vatersay, 2018; Keep Scotland Beautiful, 2021).

EVEN ON THE WEALTHIEST islands, public money alone is rarely enough to achieve a net zero outcome. A second stream of revenue may be through public–private partnerships whereby public funding is combined with investment from the private sector.

Emerging from consultation, three key strategies should be considered in implementation. First, public resources will be required to fund net zero activities. Most countries will have put in place national public policies to decarbonize those socio-economic sectors that are responsible for greenhouse gas (GHG) emissions. However, especially in mainland jurisdictions, those funds may not be easily accessible or may not be targeted to island realities. To address this, it may be necessary to "island proof" existing national net zero funding (Sindico & Crook, 2021). This phase may be less relevant for single-island SIDS, such as Jamaica, that are not politically fragmented among various islands, or for those islands that are not dependent on their metropole governments for funding. For islands with less public funding, climate finance becomes crucial to the implementation of their mitigation and net zero strategies.

Second, even on the wealthiest islands, public money alone is rarely enough to achieve a net zero outcome (Soomauroo et al., 2020). A second stream of revenue may be through public–private partnerships whereby public funding is combined with investment from the private sector (Mete et al., 2021). A concern with this form of funding is a potential lack of transparency. If island residents are not aware of their



The Greek govermment is partnering with Volkswagen to convert the island of Astypalea to sustainable mobility. The first electric vehicles, including this first fully electric police car, were put into service in June 2021, and the first public and private charging points were also inaugurated. media.vw.com

governments' intentions regarding these partnerships, you may not get community buy-in. So long as the overall economic goal of the private side of the partnership is transparent and the island community accepts these goals, then public–private partnerships may be a feasible source of funding. Greece is home to two examples of such investments. The Greek government has partnered with the German automobile company Volkswagen on the island of Astypalea (Tugwell & Rauwald, 2021) and with the French auto company Citroën on the island of Halki (Randall, 2021) to develop e-mobility projects. By encouraging the use of electric vehicles, increasing the recharging infrastructure, and providing green electricity to the island, the goal is to make the two islands more sustainable and, in the long term, more prosperous.

Third, innovation that will contribute to net zero may come not only through public funding or public–private partnerships, but also through stand-alone private investments. Island-based small and medium enterprises, larger island-based companies, and foreign companies may see financial benefits in assisting in the implementation of island net zero initiatives. Well-developed investments with input and support from the island community can lead to islands taking the lead in climate change innovation.

Implementation in Scotland

This section will explore net zero implementation policies and approaches through the lens of Scottish islands. According to the 2011 census, 103,700 people lived across 93 inhabited islands in Scotland (National Records of Scotland, 2015). Islands in Scotland belong to six local authorities, three of which (Shetland, Orkney, and the Western Isles)

Neist Point is one of the most famous lighthouses in Scotland and can be found on the most westerly tip of Skye, near the township of Glendale.

are made up entirely of islands, while the other three (Highlands, Argyle and Bute, and North Ayrshire) consist of territory on the Scottish mainland in addition to their archipelagos.

One of the key policy characteristics of Scottish islands is that Scotland is one of the few countries with a dedicated piece of legislation centred on islands: the Islands (Scotland) Act 2018 (Scottish Government, 2018; Sindico & Crook, 2019, 2021). The latter stems from the Our Islands Our Future Strategy (Orkney Islands Council, Comhairle nan Eilean Siar, & Shetland Islands Council, 2014) led by the three island-only local authorities mentioned above. As a result of the Islands (Scotland) Act 2018, Scotland now has its first ever National Islands Plan, whose aim is to improve outcomes for island communities (Scottish Government, 2019b). The Act has also enshrined in law island community impact assessments aimed at ensuring that laws, policies, and strategies adopted by the government and local authorities duly consider potential significant impacts on island communities (Scottish Government, 2018, Part 3).

THE ISLANDS (SCOTLAND) ACT has enshrined in law island community impact assessments aimed at ensuring that laws, policies, and strategies adopted by the government and local authorities duly consider potential significant impacts on island communities.

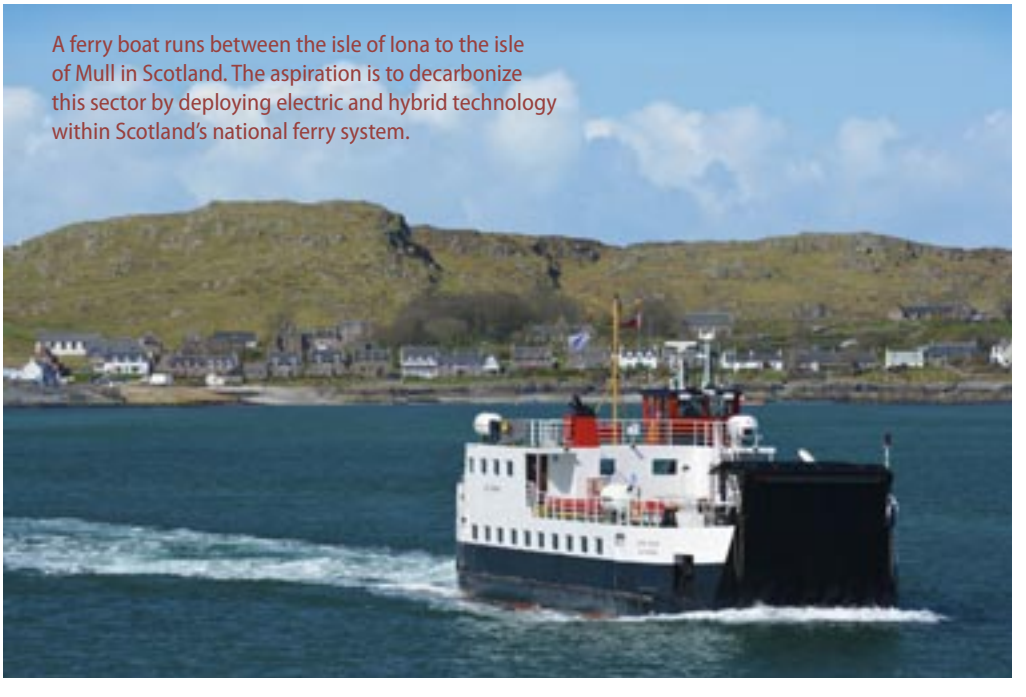
Returning to the discussion of net zero, for an implementation strategy to be successful, public, public–private, and private investment needs to focus on emission reduction projects in key sectors. In Scotland, these are: electricity (power generation); buildings; transport; industry; waste; Land Use, Land Use Change and Forestry (LULUCF); and agriculture (Scottish Government, 2021b). Decarbonizing each of these sectors presents complex technological and socio-economic challenges in any context. However, when framed within an island setting, such challenges can be heightened.

When it comes to power generation, and despite an abundance of energy sources on several islands, many islands are still heavily reliant on fossil fuel imports. With notable exceptions in places such as Orkney, several Scottish islands require diesel generators to produce local electricity (Bennett, 2020). Other islands around the world have been portrayed as successes in renewable energy promotion and electricity generation, including El Hierro in the Canary Islands (Iglesias & Carballo, 2011), and Samsø in Denmark (Jantzen et al., 2018). Eigg, a small island that is part of the Scottish Inner Hebrides, has generated worldwide attention for being almost energy independent through a careful mix of small-scale renewables, and for its community land ownership and energy planning (Chmiel & Bhattacharyya, 2015). Furthermore, as is the case with Fair Isle and Foula in the Shetland Islands, Eigg is an example of an island that is off the mainland electricity grid, thereby requiring innovation to adapt to a renewable energy world. In the future, key renewables and power

generation challenges and opportunities will be dependent on technology (storage and hydrogen in particular), financing, and regulation.

Decarbonizing public and private buildings is a key component of any new net zero policy (Lorch, 2019). Public buildings, such as schools and hospitals, can have a very high carbon footprint and therefore require special attention. Private housing is also often energy inefficient, leading some island communities in Scotland to suffer from high levels of fuel poverty. The construction of new buildings on the Hebridean island of Mull (MacDonald, 2019) is an example of a community-led project that has decreased household energy costs, while collectively playing a positive role in mitigating climate change.

Transport-related emissions are a major source of greenhouse gas emissions worldwide (Yoro & Daramola, 2020). As noted earlier, on islands, transport is often seen as an essential sector, both for islanders seeking access to higher-order services not available on the island (e.g., health services) as well as to transfer tourists to and from the island. In Scotland, there are new initiatives related to the nature of air and sea transport infrastructure. This includes testing electric airplanes in Orkney (Keane, 2021) and a plan to decarbonize Highlands and Islands scheduled flights to net zero by 2040 (Highlands and Islands Airports Limited, n.d.). Ferry services have long been the main means of passenger and freight transport for many island communities in Scotland. Given the high energy intensity of ship transport, there are efforts focusing on improving efficiency of this mode of transport (Caledonian MacBrayne, 2021). In the longer term, the aspiration will be to decarbonize the sector by deploying electric and hybrid technology within the national ferry system. Although it is a lesser contributor to



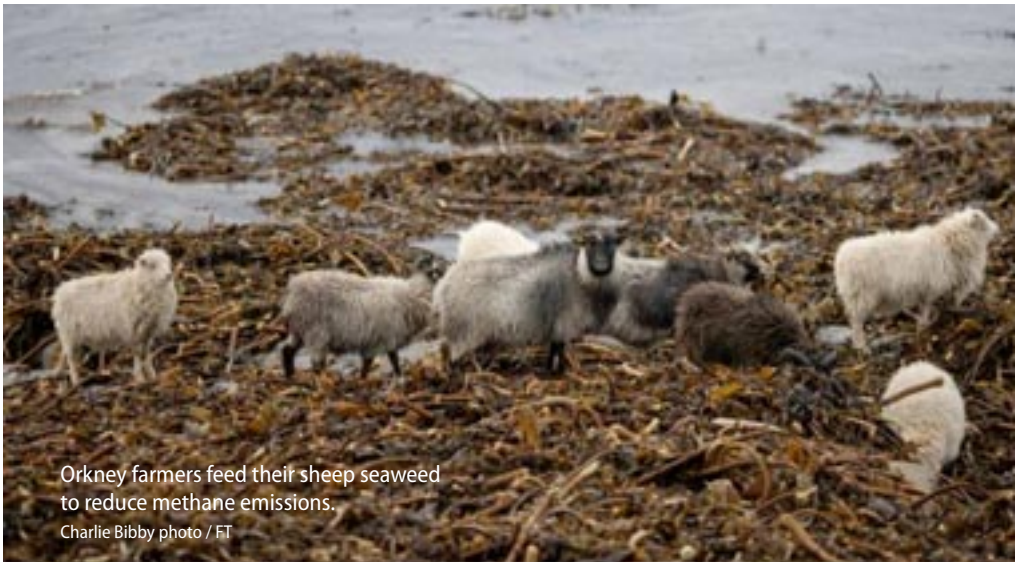
A ferry boat runs between the isle of Iona to the isle of Mull in Scotland. The aspiration is to decarbonize this sector by deploying electric and hybrid technology within Scotland's national ferry system.

overall greenhouse gases, emissions from private road transport are also being considered in the implementation of a net zero policy. This is one of the sectors where the small scale of some islands may be advantageous in testing new technologies (McKenzie, 2021), as will be discussed later in this chapter. Additional examples of increases in the number of electric cars, development of car-sharing data bases, and e-vehicle charging stations can be seen on several Scottish islands in a move to decarbonising the private transport sector (Shetland Islands Council, n.d.).

Industry will also need to reshape itself in a net zero world. In addition to those sectors that contribute directly to climate change, such as the oil and gas sector, any other industry (considered in a broad sense as activity leading to an economic output) will need to contribute to the net zero agenda while staying competitive. The rationale for engaging in these strategies goes beyond any legislative or policy requirement. Instead, it may be driven by consumers themselves who may not want to do business with climate unfriendly industries. In Scotland, two examples illustrate the net zero future facing businesses. In November 2021, the Shell oil company opted to not proceed with the development of a new oil field northwest of Shetland (BBC Scotland, 2021). It is too early to tell whether this signals the end of direct fossil fuel operations in Shetland and other Scottish islands. Another example relates to fish farming (particularly salmon) in Shetland. As the largest employer on the islands, their climate credentials will also be scrutinized by consumers and the public sector, encouraging them to become more efficient and climate friendly.

In addition to salmon farming, Shetland produces over 80 percent of Scotland's mussel harvest.
Aquasens photo

Agriculture is an often-neglected part of any net zero policy or strategy. Agriculture may not be a major sector on most Scottish islands, but it is important on some islands, in particular those that raise sheep that produce methane gases. Arran and Orkney have strong agriculture sectors and are in the process of developing good practices for farmers to contribute to a net zero world. For example, Orkney farmers are providing a winter diet of seaweed to their sheep in an effort to reduce methane emissions (Dupont, 2021).



Orkney farmers feed their sheep seaweed to reduce methane emissions.
Charlie Bibby photo / FT

The last net zero sector of relevance in Scotland is 'Land Use, Land Use Change and Forestry', or LULUCF. Most often associated with carbon offsets, including carbon sequestration, significant opportunities and challenges may exist on islands in this area. Scottish islands are home to vast quantities of peat that act as natural carbon sinks (Gewin, 2020). Peat is still used locally as a heating source, which releases carbon into the atmosphere. If it is to be replaced and kept in the ground, sequestration of peat bogs becomes a natural solution to climate change (NatureScot, 2015).

The implementation of net zero activities on Scottish islands will focus on the sectors mentioned above, tailored to the specific socio-economic and territorial conditions of each island. Overall, net zero is promoted across Scotland as a policy with an aim of reaching the target by 2045 (Scottish Government, 2019a). From an island perspective, mitigating climate change is a strategic objective of the National Islands Plan (Scottish Government, 2019b), which stems from the Islands (Scotland) Act 2018 (Scottish Government, 2018; Sindico & Crook, 2019). As part of the implementation of the National Islands Plan, the Scottish Government has established an Island Communities Fund, whose projects have (also) focused on and promoted net zero-related activities (Inspiring Scotland, 2021). As mentioned above, the Scottish Government

also launched the Carbon Neutral Islands project in 2021 to support up to six islands to become carbon neutral by 2040 (Scottish Government, 2021a).

A final observation that applies to both the climate accounting phase and the implementation of a net zero pathway relates to who carries out such activities. Ideally, both the emission baseline and the implementation of the net zero pathway would be driven by islanders. However, in many cases, island populations may lack the capacity or the human resources to carry out accounting and/or implementation. Therefore, a key priority for the Scottish islands, and SIDS in general, is to develop an internal capacity so that island net zero plans embody island priorities, knowledge, and experience.

Tracking the progress

Following the development of an emissions baseline and implementation of funding and strategy options, a net zero pathway needs to be monitored to ensure that progress is taking place. At this stage, two key observations need to be made: the timing of the monitoring, and the selection of those responsible for undertaking the monitoring. Timelines that are too distant may be meaningless. Net zero targets need to incorporate short-term deadlines for monitoring, reporting, and verification. It is crucial that governments and decision-makers investing in net zero policies incorporate periodic deadlines to ensure that incremental progress towards net zero targets is being met.

The second overall observation is about who will be undertaking the monitoring, reporting, and verification (MRV). If, for example, the same actor carries out all three activities, the net zero process may be perceived as being biased. Monitoring progress requires a new emissions baseline that can be compared to the one completed when the net zero pathway was first developed. If the emission baseline was developed by an independent consultant, it may be advisable to have the same organization monitor the MRV process. In order to take advantage of the information and capacity already developed in the initial development of the baseline, this same recommendation would apply regardless of who carried it out (e.g., island government, non-governmental organization).

Reporting requires a formal procedural activity aimed at informing the government about the emission reductions, carried out in a specific timeframe in the context of the implementation of the net zero goal. Where the organization tasked with monitoring the emissions also has the capacity needed to undertake the reporting, it may be wise to combine these closely linked activities. Verifying requires an additional control and those tasked with this third activity will need to scrutinize the initial emissions baseline and the progress made as demonstrated in the monitoring and framed by the government in the reporting. Although it may appear to be a duplication of effort, for the process to be considered credible it is important that verification is carried out by an

independent organization different from that which carried out the monitoring and reporting. However, this would require more funding and, at least in the public sector, verification is rarely a high priority. Most SIDS do not have sufficient resources to undertake all of these activities, so they may legitimately decide to focus their budget on projects and initiatives aimed at emissions reduction rather than the more costly verification process. Verification appears to be more important in the private sector where consumers may not be content with assurances from private sector companies regarding monitoring and reporting on their own operations.

In conclusion, an island net zero pathway includes three key phases: the development of an emissions baseline; the implementation of the pathway itself that can be framed around three different but complementary funding streams (public, public–private, and private); and the monitoring, reporting, and verification of the net zero process. A further question, which the chapter now turns to, is the extent to which island-based net zero pathways may serve as templates for other mainland jurisdictions.

Islands as hubs of innovation for mainland climate policies

Some research has raised concerns over projects focusing on climate change that gives islands an eco-status label. This "conspicuous sustainability" occurs "when a community or organisation undertakes an initiative that gains much of its value from its visibility, iconicity and symbolism (rather than from the environmental benefits it produces)" (Grydehøj & Kelman, 2017, p. 107). Conspicuous sustainability could also allegedly divert attention from more pressing policy matters (Baldacchino & Kelman, 2014) or issues more crucial for the livelihood of those in island communities (Robertson, 2018). This chapter acknowledges that ill-developed net zero island policies may lead to conspicuous sustainability, but it also contends that this is not necessarily the case. As noted earlier, net zero policies that emerge as a result of bottom-up community engagement can generate co-benefits that go beyond environmental and climate change objectives (Attard et al., 2021; Robertson, 2018). It is here that the concept and policies related to a just transition away from fossil fuel dependency become important to ensure that such socio-economic benefits are at the heart of net zero policies (Wang & Lo, 2021), preventing them from being perceived as a form of conspicuous sustainability.

NET ZERO POLICIES THAT emerge as a result of bottom-up community engagement can generate co-benefits that go beyond environmental and climate change objectives.

Against this background, to what extent can the implementation of island net zero policies lead to good practices applicable to mainland jurisdictions? Leaving aside the complexity of what may be meant by 'mainland', and the differences between islands (e.g., SIDS, dependent islands, and SNIJs) (Petzold & Magnan, 2019), what may be

transferable from island to mainland contexts? The field of renewable energy provides an initial answer (Skjølsvold et al., 2020). The small scale, physical separation, and, in some cases, isolation of some islands provides an opportunity for them to be considered as laboratories for innovation (Gugganig & Klimburg-Witjes, 2021; Harrison & Popke, 2018; Lee et al., 2020). The clear territorial boundaries offer the possibility of deploying smart solutions that can test the feasibility of moving to a 100% renewable energy system (Soomauroo et al., 2020). Islands have also been seen as pilots for innovation in the transport sector, with e-mobility schemes being deployed and considered on many islands due to their small size, limited resources, and isolated locations (Soomauroo et al., 2020). However, while small scale can be beneficial to test a technology in the context of a pilot, it may present a challenge and a limitation to investment due to the possible lack of a sustainable financial return.

Taking the discourse back to Scotland, good practices in the renewable energy and transport domain of a net zero policy implementation landscape can be relevant for mainland Scottish regions for two reasons. First, some rural mainland areas are also isolated and still have access to natural resources. In particular, the livelihoods and cultures of coastal communities may be very similar to that which exists on small islands. In such cases, the island net zero rationale that includes factors beyond the environment and climate change can also apply to rural or coastal isolated mainland regions. These areas may also seek to become more energy independent by making greater use of renewables. Lessons learned in the development of renewables on islands can, hence, be of interest to decision-makers and communities on the mainland.

Second, islands in Scotland can become testbeds for innovation not only in the energy field, but also in transport and other net zero sectors. Although the characteristics on the Scottish mainland will often differ, good practices developed on islands can be beneficial, as lessons will spill over not only to rural areas, but also to the mainland more generally. One caveat and word of caution on this dynamic, however, comes from islanders themselves who may not want to be seen as 'laboratories' where mainland governments can test innovative but also sometimes controversial technologies for the benefit of the mainland. These pilots and laboratories need to have the necessary community support and be seen to benefit island communities in the first place.

Overall, it is important to clarify that the extent to which island net zero policy implementation can benefit the mainland will depend on a case-by-case basis and on the kind of mainland that is being considered. Furthermore, good practices such as the ones stemming from Iceland's renewable energy story, which relate to matters of regulation, funding, and public participation, may have more to do with governance than to the island nature of Iceland (Logadóttir, n.d.).

CONCLUSIONS

Islands are often considered particularly vulnerable to the effects of climate change. Despite such vulnerabilities and the minimal role they play in contributing to climate change, islands have a strategic interest in developing ambitious climate change mitigation actions and policies. It is against this background that this chapter has analyzed islands' climate change policies and their 'net zero' pathways.

Four key conclusions can be drawn. First, islands, and SIDS in particular, have island-specific reasons for developing and implementing ambitious climate change targets, which go beyond the foundational environmental and climate change objectives. After all, on some small islands, sea level rise and extreme weather events are existential threats to the livelihood and lives of islanders. Second, despite the strategic importance of net zero targets for islands, the interest expressed by SIDS in the implementation of the Paris Agreement lies mainly in adaptation, climate finance, and loss and damage, with effective and increased climate finance being crucial to the success of any SIDS net zero policy in the future. Third, island net zero policy pathways require attention to three phases: the development of an emission baseline, a community informed (or led) net zero strategy or plan, and funding from three sources (public, public–private, and private) capable of investing in key sectors of the island economy and society. Fourth, net zero island best practices cannot necessarily be automatically replicated in mainland regions. However, especially in the fields of renewables and road transport, the small scale and relative isolation of some islands can lend themselves to serve as hubs of innovation from which practical experience can be shared with and adapted to mainland regions that may have similar socio-economic and geographic characteristics.

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The interior of a traditional house, Navala village, in the Ba Highlands of northern-central Fiji. Navala is noted for its over 200 thatched buildings). It is one of the few settlements in Fiji which remains fully traditional, architecturally.

5

Economic growth through trade liberalization

for Small Island Developing States in the Pacific: Regionalism versus globalization

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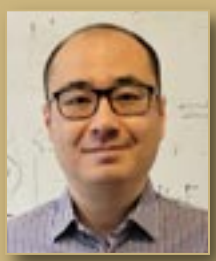


ABSTRACT

Small Island Developing States (SIDS) are unique in comparison to other developing states where foreign trade plays an important role in their economies and their growth experiences. Thus, it is crucial to understand the effects of

different strategies for trade liberalization on SIDS, namely trade integration through regional trade agreements versus global trade liberalization. In this chapter, we estimate the impact of two regional trade preferential agreements (RTAs): the Pacific Island Countries Trade Agreement (PICTA) and the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA), plus the World Trade Organization (WTO), on the economic growth of 13 SIDS in the Pacific Ocean using a dataset spanning a period between 1970–2010. We found evidence that RTAs had a positive influence on economic growth and that membership in the WTO negatively impacted economic growth for this group of islands. Defining "free" trade as regional trade integration and "freer" trade as global trade integration, our results indicate that regionalism had benefited the SIDS of the Pacific more than globalization, contrary to the conventional wisdom that greater openness of trade fosters economic growth in all states.

INTRODUCTION

International trade plays an essential role in the economies of Small Island Developing States (SIDS) and their growth experiences because it eases constraints associated with a small domestic market and geographical isolation, through specialization to improve domestic efficiency and competitiveness (Read, 2004). For instance, McGillivray, Naudé, and Santos-Paulino (2010) showed that the average trade flows as a share of GDP over the period from 1980 to 2007 were far higher in SIDS (110%) than among all developing nations (78%). Furthermore, all Pacific SIDS are subject to isolation, where diseconomies of scale are accentuated compared to other small states (Mellor, 1997). These unique challenges faced by the Pacific SIDS mean that successful trade development strategies are essential to economic growth and improvements of living standards among the region. As such, it is crucial to understand the effects of different strategies for trade liberalization on SIDS.

Most states employ both globalization and regionalism as their trade development strategies. *Globalization* focuses on increasing degrees of international integration and interdependency between countries and other economic agents in the world economy; countries employ such strategies usually through membership in multilateral trade agreements such as the World Trade Organization (WTO). *Regionalism*, on the other hand, refers to a tendency towards (preferential) regional trade agreements (RTAs) between states and their near neighbours; famous examples include the European Union and the Canada–United States–Mexico Agreement. Although the importance of trade policy to SIDS is well-acknowledged in the literature, little attention has been paid to comparing the effects of these two different trade strategies on the economies of SIDS.

In this chapter, we estimate the impact of two RTAs: the Pacific Island Countries Trade Agreement (PICTA) and the South Pacific Regional Trade and Economic

Cooperation Agreement (SPARTECA), plus the WTO, on the economic growth of 13 SIDS in the Pacific Ocean using a dataset spanning a period between 1970–2010. The dynamic panel data method is used to estimate the large panel dataset. To further the understanding of the impact of RTAs and WTO membership, we extend our analysis by investigating these trade agreements' effects on trade growth among the thirteen SIDS of the Pacific. As a comparison and robustness check, the effects of membership in WTO among a group of developed island nations and developing island states are studied for the same period, providing more support for our inference. Our results indicate that regionalism has benefited the Pacific SIDS more than globalization, contrary to the consensus that greater openness of trade fosters economic growth in all states.

The chapter is organized as follows: the next section provides an overview of the relevant literature, followed by a section describing the data source and the empirical methodology. Empirical findings are then presented in the Results section, followed by a discussion and some conclusions

THEORIES AND EMPIRICAL EVIDENCE

Most scholars support the conventional wisdom that "free (or freer) trade fosters economic growth" (Asafu-Adjaye & Mahadevan, 2012, p. 83; see also Williamson, 1998) in all states. In addition, the prevailing academic tenet suggests that trade is an accepted strategy for economic growth (Bhagwati, 1995; Krueger, 1998; Vamvakidis, 1998). The Organisation for Economic Co-operation and Development (OECD; 1998, p. 36) asserts that "open and outward-oriented economies consistently outperform countries with restrictive trade and [foreign] investment regimes." Furthermore, most researchers argue that openness to trade fosters economic growth in developed and developing countries (Sakyi et al., 2015). The following evidence offers for consideration an alternative view that contradicts the well-established view that free trade encourages economic growth in all states.

The post-war era of increasing trade liberalization was described by Krueger (2003, p. 10) in a 2003 public lecture as "the golden age — the years from 1946 to 1973, when industrial country growth was so impressive." The years noted in this quote coincide with the initial years of globalization, while the phrase "industrial countr[ies]" suggests developed rather than developing states. In the early 1950s, the developed states, with a desire to assist the economic recovery and reconstruction of the economies damaged during World War II, moved from policies of protectionism to trade liberalization (Thirlwall, 2000). This shift was initially specific to the developed states, while the application of this approach for the developing states did not occur for another 20 years (Harrison, 2005; Williamson, 2005). In the same lecture, Krueger (2003) adds that developing nations will benefit from trade deregulation and will further increase openness to trade. Despite her advocacy for developing economies' trade deregulation, Krueger does

equivocate by suggesting that safeguards are necessary to protect vulnerable states. This cautionary note is also sounded by Winters (2006) and Dollar (2005), who convey that trade liberalization creates winners and losers. These qualifying statements may suggest that SIDS of the Pacific may not benefit from all forms of trade after all.

The economic benefits found by increasing openness to trade for the developed states forecasts an expectation of similar benefits to be realized by the developing state. The developed states hold a belief that the growth to be realized by the developing states through globalization would narrow the per-capita income difference between the developed and developing states, reducing the need for financial aid (Tisdell, 2006). Hence, the World Bank imposed policies to support trade integration (Edwards, 1993). In 1979, the WTO created the 'enabling clause' which offers consideration to WTO members entertaining trade relations with non-members (i.e., developing states). The amendment led to a surge in trade agreements. As noted by the WTO (2011, p. 54), "PTA [preferential trade agreement] activity accelerated noticeably, with the number of PTAs more than doubling over the next five years and more than quadrupling until 2010 to reach close to 300 PTAs presently in force."

. . . TRADE LIBERALIZATION creates winners and losers. These qualifying statements may suggest that SIDS of the Pacific may not benefit from all forms of trade after all.

Most recent empirical studies on trade liberalization are inconsistent with earlier studies (Harrison & Hanson, 1999). We contend that the inclusion of the developing state into the more recent studies may have influenced previous findings. Rodríguez and Rodrik (2000, p. 291) also argue that the concept of free and freer trade fostering economic growth in all states is a misconception created by empirical evidence too strongly stated where the relationship between trade liberalization and economic growth was "not robust." In addition, Rodrik (1999) noted that policy literature may have oversold the benefits of openness.

Assigning partial fault of the developing states' inability to experience growth through trade on the International Monetary Fund, World Bank, and WTO, Stiglitz (2002, p. 214) contends that the international organizations have "approached globalization from … narrow mindsets shaped by a particular vision of the economy and society." In a similar voice, Bertram (2006, pp. 1–2) claims that "all players in aid and development engaged (and still engage) in a rhetorical display of allegiance to those [nationalistic development] models and policies resulting in a radical disconnection of policy discourse from economic reality." Plummer and colleagues (2011) noted that growth models are tailored to conditions that exist in developed states, which do not apply to some developing countries, especially the poorest countries. Models are created from existing theories; if the existing models, as noted by Plummer et al. (2011, p. 2), "may not be realistic for … [the] least developed countries," then new theories and models are needed specifically for such countries.

DeJong and Ripoll (2006) utilized data from 60 nations in various stages of development spanning the period 1975–2000, and found that trade barriers impede economic growth — but only among the developed nations. Yanikkaya (2003) found that trade barriers positively correlate with developing countries' economic growth. Similarly, Winters and Masters (2013) provided evidence for a positive effect of tariffs on economic growth in low-income countries. These findings are in opposition to the ideology of the WTO that lowering tariffs increases industry competition as well as industrialization and leads to a higher standard of living for low-income countries.

Stiglitz (2002) argues that globalization does not benefit many of the world's poorer nations. Specifically related to SIDS, Read (2004) takes this one step further by maintaining that globalization can be harmful to the economies of many successful small island states. Economy Watch (2021, para. 2) conveys that:

> Liberalization of trade policies, reduction of tariffs and globalization have adversely affected the industrial setups of the less developed and developing economies. [As a result, the] majority of the infant industries in these nations have closed their operations. Many other industries operating under government protection found it very difficult to compete with their global counterparts.

The totality of the research suggests two opposing international trading environments in which policies may have very different outcomes in different contexts.

DATA AND METHODOLOGY

Our sample includes 13 Pacific SIDS (see Table 5.1) with data spanning 40 years, from 1970 to 2010. The key variables of interest are those related to economic growth and trade: real GDP/capita growth, imports, exports, and participation in various trade agreements. Each state's real GDP per capita, the volume of imports, and the volume of exports were obtained from the PENN World Tables and measured in constant 2005 US dollars, while growth rates of real GDP/capita and shares of trade as a proportion of GDP were calculated based on the source data. Membership information in the two RTAs and WTO, including entry and accession dates, was obtained from the World Trade Organization and the Pacific Secretariat. Table 5.1 provides a detailed summary of Pacific SIDS membership information related to these agreements. Other commonly used development control variables such as education, life expectancy, state governance, and institutional quality are omitted due to the absence of such data for the sample period; similar data limitations have been noted by Deo (2010) and Edwards (1997).

We first summarize economic growth and trade in a scatter plot for all 13 SIDS over this period (see Figure 5.1). There are considerable variations in the growth rates of

GDP and trade volumes in the sample states, indicating desirable conditions for the purpose of empirical identification. As shown in Figure 5.1, a positive correlation between the average growth rate of GDP and trade volume is indicated by a correlation coefficient of 0.398 (significant at the 5% level), as expected. Of course, a positive correlation is not direct empirical evidence for a causal relationship between trade openness and economic growth in the region. It offers even less information about the impact of trade agreements on economic growth.

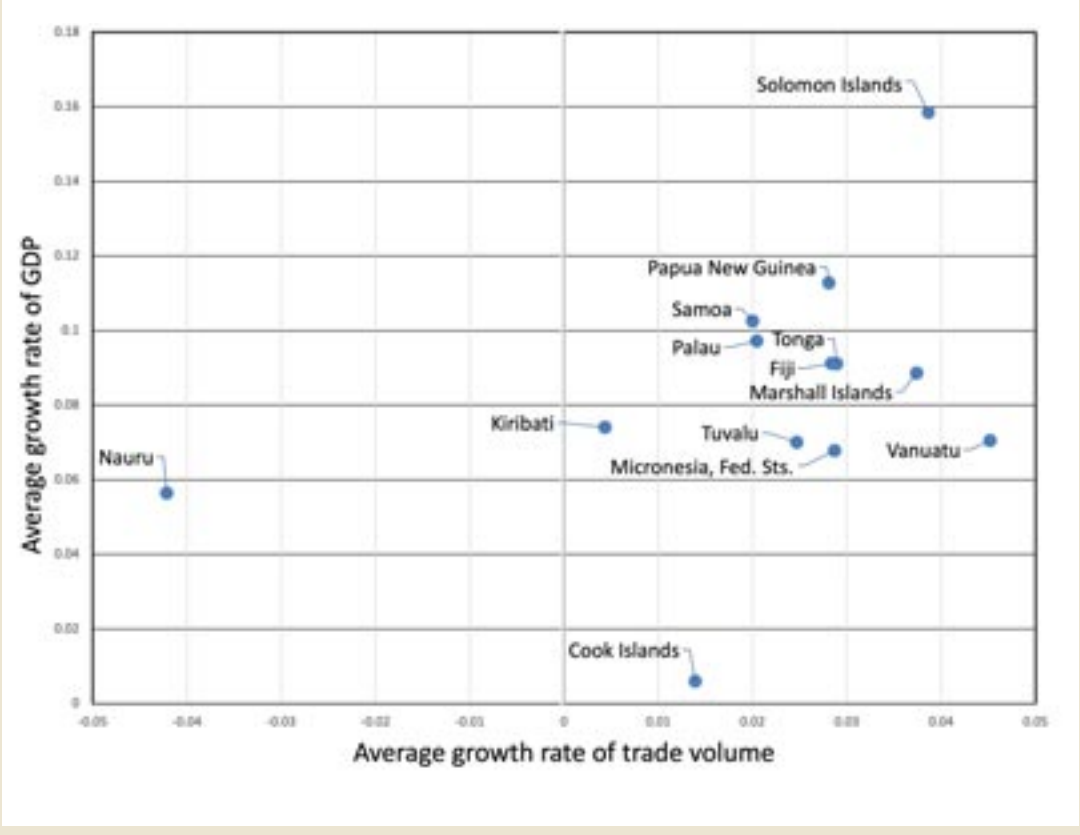
TABLE 5.1: **Island States' Entry into SPARTECA, PICTA, and WTO Agreements**

Island state	SPARTECA Entry into force	PICTA Entry into force	WTO Accession date
Cook Islands	January 1, 1981	April 13, 2003	–
Fed. States of Micronesia [a]	December 29, 1988	*see note*	–
Fiji	January 1, 1981	April 13, 2003	January 14, 1996
Kiribati	August 9, 1981	July 4, 2003	–
Marshall Islands	May 28, 1989	–	–
Nauru	September 7, 1982	April 13, 2003	–
Palau	–	–	–
Papua New Guinea	January 1, 1981	September 4, 2003	June 9, 1996
Samoa [b]	March 26, 1981	April 13, 2003	*see note*
Solomon Islands	May 15, 1981	July 2, 2003	July 26, 1996
Tonga	January 1, 1981	April 13, 2003	July 27, 2007
Tuvalu	June 3, 1981	May 16, 2008	–
Vanuatu [c]	December 17, 1981	July 21, 2005	*see note*

NOTES: a PICTA signed but not ratified.
b Not a member of the WTO for this study; accession date: May 10, 2012.
c Not a member of the WTO for this study; accession date: August 24, 2012.

Source: World Trade Organization (2008).

FIGURE 5.1: **Average Growth Rates in Trade and GDP for Pacific SIDS, 1970–2010**



The natural starting point of empirical specification (spec 1), in this case, is a simple dynamic panel model, as follows:

$$Growth\ Y_{i,t} = \beta_0 + \beta_1 Ex/GDP_{i,t-1} + \beta_2 Im/GDP_{i,t-1} + \beta_3 SPARTECA_{i,t} + beta_4 PICTA_{i,t} + \beta_5 WTO_{i,t} + u_{i,t} \quad (1)$$

Where $Growth\ Y_{i,t}$ is the growth rate of real GDP/capita in country *i* at time *t*. The set of explanatory variables includes the lagged growth rate of export over GDP ratio, $Ex/GDP_{i,t-1}$; the lagged growth rate of import over GDP ratio, $Im/GDP_{i,t-1}$; and the dummy variables indicating participation status in SPARTECA, PICTA, and WTO for country *i* at time *t*, respectively. The usage of dynamic panel methods means that lagged values of the dependent variable also enter the regression but are omitted here to conserve space. The symbol $u_{i,t}$ represents the stochastic error term.
A summary of these explanatory variables is presented in Table 5.2.

TABLE 5.2: **Description and Rationale for Including the Independent Variables**

Ind. Variable	Regression	Description and theory intuition	Source	Predicted sign
Im/GDP	Regression (1)	*Imports as a share of GDP* — An increase in imports is considered a precursor to an increase in economic activity. Therefore, the variable suggests an increase in GDP and economic growth.	PENN World Tables Constant 2005 prices (US$)	Positive (+)
Ex/GPD	Regression (1)	*Exports as a share of GDP* — An increase in exports suggest an increase in production and, therefore, in GDP and economic growth.	PENN World Tables Constant 2005 prices (US$)	Positive (+)
SPARTECA	Regression (1); Additional regressions (1), (2), and (3)	*Membership to SPARTECA (12 states)* — Represents an increase in openness to trade, leading to growth.	World Trade Organization	Positive (+)
PICTA	Regression (1); Additional regressions (1), (2), and (3)	*Membership to PICTA (10 states)* — Represents an increase in open ness to trade and, therefore, growth.	World Trade Organization	Positive (+)
WTO	Regression (1); Additional regressions (1), (2), and (3)	*Members of SPARTECA and/or PICTA who are members of WTO (4 states)* — The 162 memberships in the WTO provide for "freer" trade, an increase in openness to trade, and, therefore, growth.	World Trade Organization Pacific Secretariat	Positive (+)

NOTE: In support of the convention that "free or freer trade fosters growth," the sign for the trade agreements should be positive (+).

Three additional empirical specifications (specs 2, 3, and 4) are estimated using dynamic panel methods to study the impact of different trade agreements on economic growth, total trade growth, and export growth. The goal is to further our understanding of the ways in which different forms of trade integration impact these SIDS economies. In particular, the following three equations are estimated:

$$Growth\ Y_{i,t} = \beta_0 + \beta_1 SPARTECA_{i,t} + \beta_2 PICTA_{i,t} + \beta_3 WTO_{i,t} + u_{i,t} \quad (2)$$

$$GrowthTT_{i,t} = \beta_0 + \beta_1 SPARTECA_{i,t} + \beta_2 PICTA_{i,t} + \beta_3 WTO_{i,t} + u_{i,t} \quad (3)$$

$$GrowthEX_{i,t} = \beta_0 + \beta_1 SPARTECA_{i,t} + \beta_2 PICTA_{i,t} + \beta_3 WTO_{i,t} + u_{i,t} \quad (4)$$

The results from these regressions are presented in the next section.

RESULTS

The estimation results for specification (1) are presented in Table 5.3. The first thing to note in this table is that all of the control variables have the expected signs, as the GDP change is often persistent, so the first coefficient is positive and statistically significant at the 5% level. The constant term is negative but at an economically insignificant level. Since indicators of trade agreements are the variables of interest here, we can see that both RTAs have a positive coefficient, while membership in the WTO is associated with a negative correlation.

TABLE 5.3: **Empirical Results for the Primary Regression**

	Co-efficient	Std. error	p-value
Growth GDP/capita (lag 1)	**0.0328****	**0.0140**	**0.0185**
Constant β_0	**-0.0009***	**0.0005**	**0.0872**
Growth Imports/GDP (lag 1)	**-0.0318****	**0.0125**	**0.0112**
Growth Exports/GDP (lag 1)	-0.0113	0.0083	0.1727
SPARTECA	0.0158	0.0114	0.1657
PICTA	**0.0369***	**0.0206**	**0.0741**
WTO	**-0.0239****	**0.0115**	**0.0381**
SSR = 6.323 Number of instruments = 428 Normality of residual test: Chi^2 = 2079 [0] Wald test: Chi^2 = 32.6 [0.000]			

NOTE: ***, **, and * represent statistically significant relationships at the 1%, 5%, and 10% level, respectively. The dependent variable is growth in GDP/capita.

These coefficients for trade agreements are economically significant, pointing at several percentage points of GDP/capita movements in either direction, but membership in SPARTECA is not correlated significantly with GDP/capita growth. The coefficients suggest that membership in PICTA had a positive and statistically significant (albeit at the 10% level) impact on economic growth among the Pacific SIDS, while membership in the WTO appears to have the opposite effect at a significance level of 5%. These coefficients are substantial, in that membership in PICTA is associated with an increase of 3.69 percentage points in GDP/capita growth and membership in the WTO is associated with a decrease of 2.39 percentage points. This is a contradiction of

the consensus that openness to trade leads to economic growth. Although several studies in the literature point out that openness to trade might not be suitable for developing nations as an effective growth strategy, it is crucial that we further investigate how different trade agreements impact economic growth. In particular, we want to determine whether any of these trade agreements meaningfully impacted trade or export growth, thereby leading to GDP growth.

The results of empirical specifications (2), (3), and (4) are presented in Table 5.4. Specification (2) essentially produced the same results as the primary regression (spec 1): membership in PICTA had a statistically significant positive impact on growth and membership in the WTO significantly dampened economic growth, while SPARTECA's coefficient is positive but statistically insignificant. These estimates are very close to the results of the primary regression. As discussed earlier, it is crucial to understand the ways in which these trade agreements affect economies, including, for example, the volume of imports and exports. The third and fourth specifications offer some insights into this question. The evidence revealed through the analytical process shows membership in SPARTECA and WTO, individually, with a negative estimated coefficient, suggesting that these agreements failed to facilitate positive gains, and trade may actually be depressed.

TABLE 5.4: **Empirical Results for Additional Economic and Trade Variables**

Dependent variable	Growth of GDP/capita	Growth of total trade	Growth of export
own lag (-1)	0.0006 (0.0144)	**-0.0831***** **(0.0321)**	-0.0839 (0.0223)
SPARTECA	0.0168 (0.0114)	**-0.0373**** **(0.0179)**	-0.0185 (0.0707)
PICTA	**0.0347*** **(0.0193)**	**0.01015*** **(0.0586)**	0.0512 (0.0657)
WTO	**-0.0238**** **(0.0111)**	**-0.0658*** **(0.0369)**	**-0.0922**** **(0.0414)**
Constant β_0	-0.0008 (0.0005)	-0.0018 (0.0011)	-0.0016 (0.0035)
SSR	6.1102	25.1948	156.808
Number of instruments	428	428	428
Normality of residual test	Chi^2 = 2209.51 [0]	Chi^2 = 297.862 [0]	Chi^2 = 2342.0 [0]
Wald test	Chi^2 = 8.3913 [0.05]	Chi^2 = 14.8069 [0.005]	Chi^2 = 17.723 [0.0014]

NOTE: ***, **, and * represent statistically significant relationships at the 1%, 5%, and 10% level, respectively.

This is especially true for the WTO; membership in this international trade organization appears to support a decrease in both total trade and export growth. On the other hand, membership in PICTA is positively correlated with the growth in total trade at a 10% significance level. It is also worth noting that although the estimated coefficients associated with some of the dummy variables appear as not statistically significant for some specifications, all three dummy variables are jointly significant at the 5% level for all specifications, indicating that trade agreements do affect economic growth and trade, but not necessarily in the way commonly believed.

DISCUSSION

These empirical results have forced us to reconsider the dominant view that the elimination of trade barriers fosters economic growth for all states, a basic tenet supported by the WTO and the international financial institutions (Bhagwati & Srinivasan, 2002; Edwards, 1993; Harrison, 1996; International Monetary Fund, 2011; Rose, 2004; Zagha & Nankani, 2005). We offer two explanations for these outcomes. First, we argue that the trading environments differ between developed and developing (island) states. Secondly, it appears that geographical distance matters, such that RTAs encourage more trade integration — especially for (collectively) isolated regions such as the South Pacific. In addition, a tenet exists that island similarity of products will deter the interest to trade regionally. Contrary to this view, the Pacific Island Forum identifies the Pacific SIDS as a heterogeneous trading environment (Gounder & Prasad, 2012; Tapuaiga & Chand, 2004), and the World Bank (2016) also refers to the islands' trading environment as unique and diverse.

As noted above, researchers have challenged the conventional wisdom that fewer trade barriers encourage economic growth. Their findings tend to hold true to the developed states — and yet, policies advocating for greater trade integration within small island jurisdictions did not appear to experience similar outcomes as the developed states. As Hay (2013, p. 210) asserts, "islands are not miniature versions of non-island spaces." We argue that there are at least two trading environments: one that is more closely associated with developed states, and a second trade environment that is associated more closely with developing states. We also contend that the widely accepted tenet that "free" or "freer" trade fosters economic growth is by and large the experience of the developed states, and not of the developing states (Harrison & Tang, 2004; Williamson, 2002).

To further support these assertions, we offer two extra regressions that compare the impact of WTO membership between developed and developing island states for the same sample period, specifically regressing the growth of GDP/capita on WTO membership among two different groups of island states. The results, presented in Table 5.5, confirm our inference that WTO membership had very different effects on economic growth

in developed as compared to developing island states. In our sample, WTO membership is negatively correlated with economic growth at the 5% significance level among the developing island states, and positively correlated with growth at the 1% significance level among developed island states. In summary, these findings support DeJong and Ripoll's (2006) view that a policy that contributes to a desired effect in developed states may not support a similar outcome when implemented in developing states.

TABLE 5.5: **Economic Growth and Membership in WTO — Developed vs. Developing Island States**

	Developing Island States [a]	Developed Island States [b]
Growth GDP/capita (lag 1)	**0.0351*** (0.0112)**	**0.1569*** (0.0238)**
Growth of Imports/GDP (lag 1)	**-0.0267*** (0.0099)**	**-0.1267*** (0.0292)**
Growth of Exports/ GDP (lag 1)	-0.0112 (0.0084)	-0.00284 (00334)
WTO Membership	**-0.01771** (0.0088)**	**0.0176*** (0.005)**
Constant	0.0002 (0.0003)	**-0.0015*** (0.0003)**
SSR	6.3415	0.2711
Number of instruments	426	246

NOTES: *** and ** represent statistically significant relationships at the 1% and 5% levels, respectively. The dependent variable is growth of GDP/capita.

a The group of developing states includes Tonga, Fiji, Solomon, Papua New Guinea, and those members of PICTA that are also members of the WTO.

b The group of developed island states consists of Japan, Iceland, Ireland, Malta, Australia, New Zealand, and the United Kingdom.

Physical distances and other impediments to trade have been analysed extensively in the literature, with most studies confirming that physical distance is a significant determinant of trade flow. Not surprisingly, distance is often a significant determinant of RTAs (Sarker & Jayasinghe, 2007), where agreements are usually between countries within the same geographical area and which often share other characteristics, such as a common border, language, or colonial history. The theory underpinning this is the *gravity model*, which suggests that two trading partners in close geographical proximity

and of similar size (e.g., GDP/capita) will experience higher trade flows than trading partners of greater distances and size differentials (Anderson, 2011; Bergstrand, 1985; Pöyhönen, 1963; Tinbergen, 1962). Such results have also been confirmed in empirical studies (Vicard, 2011). We argue that PICTA consists of states of similar economic size and relative geographical proximity, which thereby offers the Pacific SIDS a significant benefit in trade and economic growth against membership in SPARTECA and/or the WTO. Members in the latter group tend to be at greater geographical distance and have greater variation in economic size. This outcome is not surprising; these trade patterns also exist among developed countries. The largest trading partners of the USA are its neighbours, Canada and Mexico, for example, and 60% of all EU trade in goods is among its own members (European Commission, 2021).

The findings presented here have important policy implications for SIDS and other developing nations. First, it suggests that regional trade agreements should be utilized as the primary trade liberalization strategy among SIDS, as opposed to broader and more general trade agreements such as membership in the WTO. Second, it emphasizes the benefits of prioritizing trade among partners with common economic characteristics and geographical proximity. In other words, our results favour regionalism over globalization as a trade liberalization strategy for SIDS. In addition, our results indicate more growth benefits for developing nations in 'south–south' relationships than in 'north–south' trade agreements, given that all PICTA members are SIDS whereas SPARTECA and WTO members are a mixture of developed and developing nations.

CONCLUSION

This research aimed to examine the differences between the impact of two trade liberalization strategies, globalization and regionalism, on SIDS economies. To this end, we narrowed our cases to a group of developing island states in the Pacific, with two regional trade agreements — SPARTECA and PICTA — representing a regionalism trade strategy, while membership in the WTO represents a globalization strategy.

In support of the statement under the category of regionalism, or "free" trade, PICTA was repeatedly found to have a statistically significant positive impact on the growth of GDP/capita and total trade. However, we could not establish a statistically significant relationship between PICTA and growth in exports. We contend that our evidence in this study supports the view that "free" trade (regionalism) fosters economic growth by promoting trade relationships between members of the agreements.

In contrary to the "freer" trade component of the statement given by Williamson (1998), we found that membership in the WTO failed to promote trade (and, in turn economic growth) among its SIDS membership in the Pacific. Repeatedly, we found statistically significant negative correlations between WTO membership and GDP/capita growth, total trade growth, and export growth.

Our findings are both consistent and inconsistent with the conventional wisdom that free or freer trade fosters economic growth. We found that "free" trade (i.e., RTAs) fosters economic growth, while "freer" trade (i.e., multinational trading partners) could negatively affect economic and trade growth. In closing, these results seem to support the statement by Pigka-Balanika (2013, p. 4) that "regions, so structurally different from the rest of the world" should not be compared, for such "global comparison[s] [are] particularly meaningless." Small Island Developing States are not mainland developed states, and policies constructed to benefit developed states should not be seen as applicable to developing island states without additional research.

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In Gili Trawangan, Indonesia, a biorock reef restoration course is offered by the Gili Eco Trust (GET). GET was established in response to concerns about treatment of the environment and the island's future.
Photo: https://giliecotrust.com

6

Exploring the use of environmental instruments as a method to promote sustainable tourism in islands

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ABSTRACT

Environmental policy management largely impacts the ways in which tourism destinations can maximize the positive impacts and mitigate the negative impacts of tourism. Since tourism destinations differ in their economic, social, and environmental states, it is a challenge to identify environmental instruments (tools, strategies, laws, and institutions) that will effectively achieve policy goals ensuring sustainable tourism development.

Environmental instruments that focus on increasing the capacity for sustainable tourism development in islands must be studied in order to determine the most plausible methods to support this form of development.

This chapter uses a case study approach to explore innovative forms of management through non-regulatory environmental instruments. A number of island destinations are presented as best practice examples of effective implementation of environmental instruments to increase sustainable tourism. The instruments discussed in this chapter examine alternative methods of managing tourism that are flexible and tailored to the destination, including economic instruments such as ecotaxes, voluntary initiatives such as the formation of an environmental management trust or committee, and education and outreach initiatives through mechanisms such as pledges and incentives. The results suggest that non-regulatory instruments are crucial to increased sustainable and regenerative tourism in island destinations. Such instruments are usually grassroots in nature, with the ability to collaboratively engage stakeholders in a manner that complements or replaces regulation in island destinations and, as this chapter demonstrates, have proven to be successful at creating change in an island destination.

INTRODUCTION

Islands have long been popular destinations because of their characteristics (Parra-López & Martínez-González, 2018), including their geographical features and natural resources. For many islands, tourism is one of the key industries — if not the predominant industry — driving the economy (Graci & Van Vliet, 2020). This can lead to the development of and reliance on tourism, such as 'sun, sand, and sea' tourism, which depends on islands' natural resources to generate demand. In many tropical destinations, such as Hawai'i, Fiji, and Barbados, this has led to the growth of mass tourism. Depending on tourism as an export can create a precipitous reliance on a highly sensitive industry, prone to disruption for a variety of exogenous reasons (Lee et al., 2014). This issue is particularly prominent in Small Island Developing States (SIDS) which may put most of their 'eggs' in their tourism 'basket' (Lee et al., 2014). The lack of a diversified economy is especially problematic, as demonstrated during the current COVID-19 pandemic (Organisation for Economic Co-operation and Development [OECD], 2021). COVID-19 has decimated the tourism industry in general, and on islands in particular (OECD, 2021; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2020), identifying the need for

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tourism to be not only managed sustainably (Sharma et al., 2021) but with a focus on regeneration (UNESCO, 2020). Tourism in islands is highly sensitive to pandemics but also environmental disasters and a wide variety of other external and uncontrollable events. As such, tourism should be managed appropriately in these destinations to increase sustainable management and ensure sustainable livelihoods.

The development of tourism in island destinations can bring positive benefits when managed sustainably; however, it is also "confronted with multiple challenges and problems, and is the source of social, environmental and economic distortion on a large scale" (Lockhart & Drakakis-Smith, 1997, as cited in Carlsen & Butler, 2011, p. 11). Island destinations are more sensitive to environmental degradation than other tourism destinations (Graci & Van Vliet, 2020; Parra-López & Martínez-González, 2018) and are particularly vulnerable to the impacts of climate change (Jones & Phillips, 2017). In island destinations, the resources that attract tourists are usually the ones in danger of being depleted (Birdir et al., 2013). Therefore, it is pertinent to study initiatives beyond regulatory compliance that can increase the uptake of sustainable and regenerative tourism in island destinations.

IN ISLAND DESTINATIONS, the resources that attract tourists are usually the ones in danger of being depleted. It is pertinent to study initiatives beyond regulatory compliance that can increase the uptake of sustainable and regenerative tourism in island destinations.

Environmental management largely impacts the ways in which tourism destinations can maximize the positive impacts and mitigate the negative impacts of tourism. Since tourism destinations differ in their economic, social, and environmental states, it is a challenge to identify environmental instruments — tools, strategies, laws, and institutions that can be used to ensure sustainable tourism development — that will effectively achieve policy goals (Ayuso, 2007; Harrington & Morgenstern, 2007; Yasamis, 2011). This chapter will explore how innovative methods of sustainable tourism may be implemented using environmental instruments that are voluntary, collaborative, and, in many instances, generated by grassroots actors in their development. While there is a place in all destinations for sustainable tourism policy brought about by the government, it is just as important to foster innovation in tourism management through the use of voluntary and collaborative approaches that support sustainable development of tourism. This chapter will specifically focus on economic instruments such as ecotaxes and voluntary instruments such as trusts and committees, many of which involve partnerships and collaborative approaches to management and education and outreach.

TYPES OF ENVIRONMENTAL INSTRUMENTS

The term ***environmental instruments*** refers to a collection of methods and strategies that an actor may use to ensure or promote sustainable development (Ayuso, 2007; Harrington & Morgenstern, 2007; Yasamis, 2011). Environmental instruments are used in a tourism context to mitigate the negative impacts of tourism, which may include natural resource depletion, pollution, and biodiversity loss (Logar, 2010). An appropriate and effective combination of instruments depends heavily on the unique circumstances of the destination implementing them (Goulder & Parry, 2008). A different combination of environmental tools may be appropriate given the specific circumstances of each destination, with 'one-size' strategies not being able to fit all contexts (Øian et al., 2018).

Environmental instruments can be successful if three conditions are met: they must be effective (i.e., they can meet their objective), acceptable to relevant stakeholders, and technically and economically feasible (Logar, 2010). There are generally five categories that environmental instruments fall under: *regulatory, economic, voluntary, educational,* and *informational* (Winfield, 2015). Historically, governments have opted for regulation when developing responses to sustainable tourism development issues (Palmer & Riera, 2003). Regulatory instruments are government tools used to prevent degradation and control the management of resources in a destination, such as land-use, pollution control, or water-use regulations (Øian et al., 2018; Winfield, 2015). However, several economic, voluntary, and educational instruments have also been implemented in destinations to address the environmental challenges accompanying tourism development. These are considered *beyond compliance measures* as they exist in addition to and can exist without regulation. Beyond compliance measures refer to initiatives put in place that go beyond, or past, compliance with existing laws and regulations, focusing on continual improvement of environmental management (Plaut, 1998). This chapter will consider some of these beyond compliance instruments and discuss innovative examples from several island destinations.

ENVIRONMENTAL INSTRUMENTS can be successful if three conditions are met: they must be effective (i.e., they can meet their objective), acceptable to relevant stakeholders, and technically and economically feasible.

Wurzel, Zito, and Jordan (2013) categorize environmental instruments into three typologies based on the coerciveness of the instrument. The first typology identified by Wurzel et al. (2013) is the ***regulatory instrument***. Often labelled as 'command-and-control', this typology is the 'hardest' and generally most coercive policy instrument available. Regulatory instruments require government or state actor intervention that typically prescribes how those subject to the regulation ought to act. Regulations tend to be reactive in nature and require a high degree of monitoring and enforcement to

be successful. Typical instruments available in this category include "bans and prohibitions, design and production norms, licenses and permits, standards, use restrictions, and zoning" (Wurzel et al., 2013, p. 33). These types of instruments are rigid, which makes them less suitable for implementation in situations that are novel or highly complex (Annandale et al., 2004). Because of their rigidity and reactive nature, regulatory instruments often do not enable innovative forms of environmental management.

The second typology is ***market-based instruments***, whose sub-categories include taxes and emissions trading. These instruments are somewhat coercive and choice-constraining but are meant to motivate actors with financial incentives rather than regulatory constraint (Wurzel et al., 2013). Relevant to this chapter, market-based instruments typically include ***economic instruments*** such as ecotaxes, user fees, and voluntary funds collected. While these types of instruments are effective for generating revenue to properly manage destination resources (Øian et al., 2018), it can be difficult to determine the most appropriate and acceptable structure for the destination (Heffer-Flaata et al., 2020).

REGULATORY INSTRUMENTS are rigid, which makes them less suitable for implementation in situations that are novel or highly complex. Because of their rigidity and reactive nature, regulatory instruments often do not enable innovative forms of environmental management.

The least coercive typology of environmental instruments is the ***suasive instrument***. This is the 'softest' instrument that represents the least choice-constraining interventions available to policy makers (Wurzel et al., 2013). These types of instruments may appeal to consumer values and/or social norms to impact behaviour and create desired outcomes. The sub-categories of suasive instruments are informational measures and voluntary agreements. These sub-categories represent a wide variety of *voluntary* and *educational/outreach instruments*, including environmental education campaigns and eco-labels (informational measures) and voluntary codes of conduct/best practices (voluntary agreements). These instruments are highly flexible and can be tailored to meet the needs of specific destinations and situations (Arimura et al., 2008; Van Vliet, 2015). Suasive instruments do not require government involvement or support to function and can be implemented by a variety of actors. These instruments can also support improved efficacy of other environmental instruments used and of the overall environmental management plan in a destination (Birdir et al., 2013). Suasive instruments are unlikely to be effective at producing sustainable outcomes on their own, however, and it is difficult to measure impacts of educational/outreach instruments (Cárdenas et al., 2015; Van Vliet, 2015). This chapter will focus on discussion of *economic*, *voluntary*, and *educational/outreach* instruments.

Economic instruments

Economic instruments are tools used to attach a monetary value to the negative impacts that tourists have on a destination and to collect funds to mitigate these damages (Birdir et al., 2013; Logar, 2010). There are a variety of economic instruments that a destination may use to collect money to manage the destination. The purpose of environmental instruments in tourism is to "leverage the interests of tourists, [businesses], governments, and conservation groups to provide communities with a financial incentive to conserve" (Coral Reef Alliance, 2014, p. 8). Economic instruments require visitors to pay in some way for access to the destination or area, and may include ecotaxes, user fees, voluntary fees, financial incentives, and others (Logar, 2010). Economic instruments can be helpful in collecting money for destination management funds which, when managed correctly, can improve the tourism offering and protect the environments that tourism stakeholders rely on (Øian et al., 2018).

STUDIES HAVE SHOWN THAT tourists are particularly willing to pay if their money is going towards sustainability-related initiatives. This may be because they value a clean and healthy environment , and also because the improvement of the environment will lead to better tourism experiences.

An important factor in the success of economic instruments is user willingness to pay (Dolnicar, 2020; Van Vliet, 2015). *Willingness to pay* refers to the level of acceptance of economic instrument policies by tourists and other stakeholders. In other words, when economic instruments have been imposed, will visitors actually pay them? The literature presents mixed results, as willingness to pay varies significantly between destinations and socio-economic groups (Dodds et al., 2010) and is best analysed on a case-by-case basis (Enriquez-Acevedo et al., 2015). In general, however, there is a tendency towards acceptance of economic instruments and, across various studies, many tourists have indicated that they would be willing to pay to help conservation and destination management efforts (Cetin et al., 2017; Dodds et al., 2010; Van Vliet, 2015). Studies have shown that tourists are particularly willing to pay if their money is going towards sustainability-related initiatives (Dodds et al., 2010; Law & Cheung, 2007; Scott et al., 2003). This may be because they value a clean and healthy environment (Law & Cheung, 2007), and also because the improvement of the environment will lead to better tourism experiences (Dodds et al., 2010). Visitors are especially willing to pay if the money is going towards maintaining or improving their experience (Birdir et al., 2013; Cetin et al., 2017) and contributing to aesthetic improvements within a destination (Dodds et al., 2010). Willingness to pay for services not linked closely to tourism but which are nonetheless important for the facilitation of tourism, such as water supply and treatment, for example, have not been studied closely. Existing research suggests, however,

that tourists are less likely to be willing to contribute to funding the maintenance of systems that are not specific and identifiable to tourism and instead are generally for the health of the destination as a whole (Dodds et al., 2010). These studies show that tourists are generally willing to pay for conservation and sustainability initiatives — those that they perceive as linked to tourism and their experience, at any rate — since they may feel some responsibility towards improving destination sustainability or, at least, have identified that these initiatives will enhance their experience (Dodds et al., 2010). Tourists demonstrated a willingness to pay for sustainability practices, and were generally prepared to take responsibility and to pay to assist in preventing further degradation (Dodds, 2013), but there were discrepancies on who they felt should be responsible for implementing these measures (Dodds et al., 2010).

Environmental taxes

An ***environmental tax*** is levied to increase the cost of an activity with a goal of decreasing demand for its production and consumption (OECD, 2017). An important feature of an environmental tax is that it attempts to correct a type of behaviour or activity that is detrimental to the environment (Palmer & Riera, 2003). In other words, the goal of levying an environmental tax should be to correct the behaviour and internalize the negative impacts of the taxable base (OECD, 2017). Two types of environmental tax often discussed in a tourism context are Pigouvian taxes and Balearic taxes.

AN ENVIRONMENTAL TAX is Pigouvian if, when the tax rate is applied to the taxable base that has a perfect link to the environmental problem, the amount generated is equal to the external marginal damage at optimal levels of production. This means that the amount charged and collected is directly proportional to the damage created by the taxable base activity.

Pigouvian taxes, named after the English economist Arthur Cecil Pigou, are put in place to charge an adequate price in order to account for externalities that are unintended but present (Palmer & Riera, 2003). An environmental tax is Pigouvian if, when the tax rate is applied to the taxable base that has a perfect link to the environmental problem, the amount generated is equal to the external marginal damage at optimal levels of production (Palmer & Riera, 2003). This means that the amount charged and collected is directly proportional to the damage created by the taxable base activity. This type of tax is uncommon in tourism since the taxable base of accommodation is not perfectly connected with the environmental damage caused by tourism (Gago et al., 2009).

Named after the Spanish archipelago where they were first introduced, *Balearic taxes* are said to deliver a second-best or sub-optimal solution (Palmer & Riera, 2003). A Balearic tax is an environmental tax developed specifically for tourism (Van Vliet, 2015), and is structured so that the tax rate is applied to a relevant taxable base (usually

accommodation per person, per night), charging tourists for their presence in a destination (Palmer & Riera, 2003; Plzáková & Studnička, 2021; Sefeld, 2017). The amount generated through a Balearic tax is usually not equal to the damage created by the taxable base activity and, therefore, does not fully internalize negative externalities caused by tourism activities. Room taxes generally fall under this category since the connection between accommodation and environmental degradation is not perfect and the funds raised are generally not adequate to fully compensate for environmental impacts caused by tourism (Gago et al., 2009).

There are both economic and environmental reasons to levy taxes on tourism activities (Gago et al., 2009; Plzáková & Studnička, 2021). Since tourists enjoy the resources and public services that a destination has to offer, charging tourism taxes is a reasonable way for them to properly compensate the destination for their overuse (Gago et al., 2009). Gago and colleagues (2009, p. 382) note that charging tourism taxes are justified on three main grounds: 1) Revenue raising objectives; 2) Coverage of conventional costs of public services; and 3) Internalization of external costs. A concern raised regarding the implementation of tourism taxes is often the overall effect that it will have on tourism demand — specifically, that it will reduce destination competitiveness as price-sensitive tourists opt for cheaper, substitutable destinations (Hudson et al., 2019). This concern is often raised by industry stakeholders (Sefeld, 2017; Sheng & Tsui, 2009). Heffer-Flaata et al. (2020) have found that the overall impact of tourist taxes on tourist demand depends on the destination, especially since different destinations implement different kinds of taxes. In general, their study found that tourists (in this case, outbound UK tourists) are sensitive to tourist taxes, although the elasticity of their demand depends on peak versus off-peak travel times and varies across destination countries (Heffer-Flaata et al., 2020). Through economic modelling and qualitative interviews, Hudson and colleagues (2019) found that, among eight US hotel markets, increased accommodation taxes did not substantially impact demand and tourists were not likely to choose substitutable destinations if taxes were increased 'too high'. Taxes on accommodation often represent a small percentage of the overall cost of the vacation or travel, and their impacts may be seen by the traveler as negligible (Bonham et al., 1992), however the impact of tourist taxes is more significant for low-cost tourists, since they are generally more sensitive to changes in price (Heffer-Flaata et al., 2020). Nevertheless, research does show that tourists and residents generally show favourable attitudes towards tourism ecotaxes, and that ecotaxes are typically more accepted by

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tourists with higher education and income levels (Cantallops, 2004; Dodds et. al, 2010).

Scholars who have conducted research on the effectiveness of environmental or 'tourism' taxes say that there is still a significant research gap and that more inquiry into these types of taxes is needed to understand the true impacts and criteria for success (Heffer-Flaata et al., 2020; Palmer & Riera, 2003; Van Vliet, 2015). Specifically, the process of developing the justification for the taxable amount per tourist, per destination needs to be better established, since each destination is highly unique and, therefore, may require a different tax structure (Logar, 2010). The amount charged per tourist must also consider the net environmental damage of tourism in the area in order to properly account for the presence of tourism. The rise of unregistered accommodation must also be considered, since the taxable base of eco-taxes are often on accommodation. If not properly accounted for, guests who stay in unregistered accommodation, such as AirBnB or VRBO, may be able to avoid paying 'tourist taxes' altogether (Logar, 2010; Palmer & Riera, 2003; Plzáková & Studnička, 2021). In addition, the overall effectiveness of this tool must be considered in light of its definition. Do the taxes achieve their goal and decrease the volume of tourism while increasing its value, or do they merely generate revenue to deal with problems related to sustainability and mass tourism after the fact? The case studies presented later in this chapter highlight instances of destinations successfully implementing tourism taxes. These destinations raise funds to increase the level of sustainability at the destination and assist in contributing to implementing environmental management practices such as conservation, waste management, and pollution control.

Voluntary instruments

Voluntary instruments differ from economic instruments in that they are significantly more flexible and are aimed at influencing rather than controlling behaviour and do not require government involvement (Van Vliet, 2015; Winfield, 2015). In general, voluntary instruments are significantly more flexible than other types of instruments because they tend to be non-binding (Arimura et al., 2008; Weiss, 2014). In the area of international environmental law, voluntary instruments may also be referred to as non-binding legal instruments. These non-binding instruments set precedents and norms that may influence behaviour and, in some cases, set the groundwork for creating binding agreements (Weiss, 2014).

Voluntary instruments do not require government funding or involvement and, in a tourism context, are usually aimed at educating tourists to increase awareness of particular issues in a destination (Øian et al., 2018). An example of this is the ChildSafe movement, which generates awareness of child exploitation in South Asian tourism industries and beyond (Responsible Travel, 2016). Arimura et al. (2008) found that voluntary instruments, in their case voluntary certification (ISO 140001) and environ-

mental performance reporting in facilities in Japan, improved the environmental performance of private businesses over time. Voluntary instruments can take many forms and can be as innovative as the organizations implementing them. An advantage of voluntary instruments is that stakeholders can tailor the instrument to fit their exact specification (Ayuso, 2007; Winfield, 2015), making it an ideal tool for crafting a response to a destination's unique needs.

Successfully implementing voluntary instruments requires commitment from all stakeholders in a destination, which can be a limitation on their effectiveness (Van Vliet, 2015). Because voluntary instruments are, as the definition implies, not compulsory activities, unengaged stakeholders can severely inhibit their success (Pavia et al., 2015). A further limitation is the inability to enforce voluntary instruments if a stakeholder or group of stakeholders is not complying, although education regarding the benefits of following voluntary initiatives may be an effective strategy to overcome this barrier (Van Vliet, 2015). The benefits of participating can include improved public perception, improved environmental performance (Berghoef & Dodds, 2013), cost savings, competitive advantage, employee retention, and being regarded as industry leaders (Graci & Dodds, 2008). These could be powerful motivators for encouraging stakeholder compliance with voluntary instruments.

Common voluntary instruments include eco-labelling/certification, following best practices or codes of conduct, and tracking environmental performance indicators (Øian et al., 2018). Another notable instrument is the development of sustainability committees or trusts that manage the implementation of initiatives on islands. Case studies of two island destinations with trusts or committees that manage sustainability initiatives, Gili Trawangan, Indonesia and Savusavu, Fiji, will be discussed later in the chapter.

Educational and outreach instruments

Educational/outreach instruments are designed to support other environmental instruments by creating an awareness among tourism stakeholders of the importance of environmental conservation (Øian et al., 2018). These types of instruments encourage the public to participate in helping the destination reach their sustainability goals (Van Vliet, 2015). Educational instruments provide the opportunity for community and tourist engagement and may influence the behaviour of tourism stakeholders in a positive way. Educational instruments can be implemented on a large or small scale, with broad or specific objectives aimed at addressing one topic or many (Van Vliet, 2015). Educational programming can provide incentives for participants, but this is not always the case (Van Vliet, 2015). As with voluntary instruments, education programs are flexible and can be crafted specifically for a destination to meet their goals (Van Vliet, 2015). Environmental instruments supported by educational/outreach programs have been found to have a higher likelihood of success than those that were not (Birdir et al., 2013). This may indicate that educational instruments play an important role in increasing the effectiveness of overall environmental management plans.

ENVIRONMENTAL INSTRUMENTS supported by educational/outreach programs have been found to have a higher likelihood of success than those that were not. This may indicate that educational instruments play an important role in increasing the effectiveness of overall environmental management plans.

A limitation of educational/outreach instruments is that it is often difficult to measure program impacts. Assessing levels of awareness before and after exposure to the program can be a challenge (Cárdenas et al., 2015). Determining the direct impacts of one instrument may only be possible in cases where other influences are not present and there are variables that can be used to measure the changes (Van Vliet, 2015). Consequently, it is difficult to determine the effectiveness of educational/outreach instruments in producing sustainable outcomes. As mentioned above, however, they can play an important role in improving the overall effectiveness of environmental management plans.

Tourism pledges or codes of conduct are an example of an educational/outreach instrument created by a destination. These are essentially statements of good intentions made by businesses or destinations (Ayuso, 2007) that create an emotional connection between the tourist and the destination (Albrecht & Raymond, 2021). These tools could also be described as moral codes outlining acceptable and desired behaviour in the context of duties and rules (Øian et al., 2018). Pledges and codes tend to be more effective when they are supported by other instruments (Chen, 2021; Haugen, 2019). Pledges in particular may be more effective if they are accompanied by a written or verbal action and if they are given in the presence of others (Albrecht & Raymond,

2021), and are most effective when they are short, giving the targeted audience clear instructions (Chen, 2021). Chen (2021) found that pledges, on their own, are not effective at ensuring responsible travel behaviour, but could be more effective in combination with other instruments. The island nations of Palau and Iceland both have responsible tourism pledges, and their case studies will be discussed below.

CASE STUDIES

The case studies that follow present examples of successful implementation of economic, voluntary, and educational/outreach instruments related to tourism in Namena (Fiji), the Balearic Islands (Spain), Gili Trawangan (Indonesia), Savusavu (Fiji), Palau, and Iceland.

Economic instruments

Namena Marine Reserve, Fiji

The Namena Marine Reserve is located in Fiji and encompasses the island of Namena, a large barrier reef and marine environment (Wildlife Conservation Society Fiji, 2019). The marine reserve encompasses over 60 km^2 of territory (Wildlife Conservation Society Fiji, 2019). This area is considered one of the top dive destinations in the world, attracting divers from across the globe, and the management of the protected area is considered a best practice model for sustainable management of marine environments (Coral Reef Alliance, 2014). The reserve was created in 1997 by local indigenous leadership in response to the impacts of commercial and private overfishing and poaching, which had little economic benefit for locals while greatly threatening the biodiversity of the area (Clarke & Jupiter, 2010; Coral Reef Alliance, 2014). The success of the marine protected area has largely depended on respect for traditional governance structures (chiefly authority) rather than formal and nationally recognized legal mechanisms. However, there are now some national laws in place to protect the reserve, thereby aligning national law with the wishes of the communities in the area to strengthen recognition of indigenous land ownership and customary resource management (Clarke & Jupiter, 2010).

The Namena Marine Reserve charges a dive fee for every marine recreation user accessing its waters.

To generate revenue to protect the marine protected area and provide an incentive

for conservation, the reserve charges a dive fee for every marine recreation user accessing its waters. The tax was first established as a 'goodwill' fee in 1998 and charged recreational users $2 FJD (~$1 USD) (Coral Reef Alliance, 2014). While the system was initially informal and enforced haphazardly, this changed in 2003 when a formal policy was implemented (Coral Reef Alliance, 2014). Upon further investigation, it was found that recreationalists were willing to pay more than the small user fee and, accordingly, the rate has increased progressively since then (Coral Reef Alliance, 2014). The dive tax was increased to $20 FJD in 2003 (Coral Reef Alliance, 2014) and in 2012 was raised to $30 FJD (~$15 USD) which remains the current rate as of 2021 (Namena Marine Reserve, 2015). All divers or swimmers in the marine park must pay this contribution by purchasing a 'tag' from one of the authorized stakeholders, which include a local resort, a conservation officer, or any dive outfit or tour operator on the island (Namena Marine Reserve, 2015). Users make this annual contribution and, in return, have access to the reserve until December 31st of the year of purchase (Namena Marine Reserve, 2015). The dive fee was created as a way to provide local communities with an economically attractive alternative to overfishing and to encourage environmental stewardship from tourists (Coral Reef Alliance, 2014). Funds collected go towards management of the marine reserve, scholarship funds for local students, and other community initiatives.

DIVE TOURISTS AND OTHER recreational users are willing to pay the additional fees, provided that they can see the impacts of their contribution (i.e., enduring conservation and community initiatives) and can take evidence with them that they contributed to the cause.

It has been found that dive tourists and other recreational users are willing to pay the additional fees provided that they can see the impacts of their contribution (i.e., enduring conservation and community initiatives) and can take evidence with them that they contributed to the cause (Coral Reef Alliance, 2014). This is one reason why all users are given a sturdy, plastic dive tag that they can take home. The dive tag is an effective tool for environmental managers, since it achieves the following objectives:

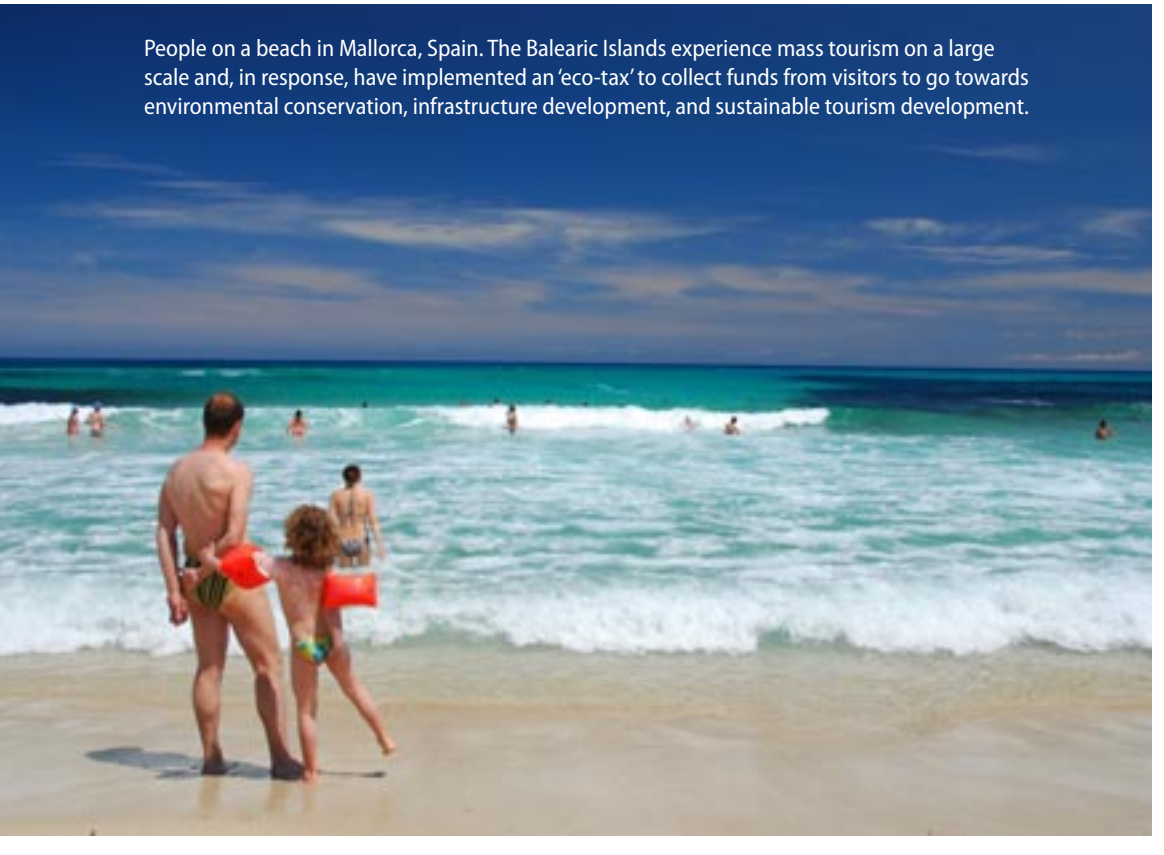
1. Raises awareness of the destination and why it is a special place;
2. Encourages good relationships with operators who feel good about helping conservation efforts and have a differentiating selling point;
3. Provides a 'collector's item' that reminds the user of their time on the island and gives tangible evidence that they contributed to a cause;
4. Can be used as an advertising/promotional tool for the area when users take the tags away with them and show them off to friends, colleagues, etc.;
5. Provides value for money, as divers are purchasing an annual tag. They will likely only stay for about a week, but they recognize that their contribution allows them access for a whole year. (Coral Reef Alliance, 2014)

Charging an annual fee for environmental protection and conservation is an excellent way to ensure that funds are made available for management of the tourism destination.

Balearic Islands, Spain

Located in the Mediterranean Sea, the Balearic Islands are a group of four island territories of Spain, consisting of Mallorca, Menorca, Ibiza, and Formentera. Collectively, these islands are one of the most tourist-dependent areas in the world with a tourism-led economy (Inchausti-Sintes et al., 2020; Valdivielso & Moranta, 2019). While the islands collectively have a population of around one million people, they see over 25 million tourist arrivals per year on average (Agència de Turisme de les illes Balears, 2017). The Balearic Islands experience mass tourism on a large scale and, in response, have implemented an 'eco-tax' to collect funds from visitors to go towards environmental conservation, infrastructure development, and sustainable tourism development (Agència de Turisme de les illes Balears, 2017). According to the Agència de Turisme de les illes Balears (2017, p. 10), the fee is meant to "compensate Balearic society for the environmental cost" of tourism on the islands.

The current version of the eco-tax has been in effect since 2016, after a failed attempt to implement a similar tax in 2001–2002 (CE Noticias Financieras, 2019;



People on a beach in Mallorca, Spain. The Balearic Islands experience mass tourism on a large scale and, in response, have implemented an 'eco-tax' to collect funds from visitors to go towards environmental conservation, infrastructure development, and sustainable tourism development.

Porter, 2015). The tax is collected per person, per night by accommodation suppliers on behalf of the tourists, for every person, whether foreign or local, staying in accommodation facilities (with the exception of guests under 16 years of age). Cruise ship passengers also pay a fee per person, per night when they dock at a relevant port (Ecotasa Balearas, 2015). The fee per guest ranges from €1–€4 per night depending on the location and type of accommodation, with the fee increasing in high-end accommodations (CE Noticias Financieras, 2019; Mymenorca, 2021). The fee decreases during low season (November to March), with the nightly charges for all accommodation being decreased by more than half (Ecotasa Balearas, 2015). After nine nights at a single accommodation supplier, the nightly rate for guests is halved, regardless of whether it is in high or low season (Mymenorca, 2021). Between July and December of 2016, the first year of implementation, the fund collected over €30 million to be directed towards conservation and sustainable development (Agència de Turisme de les illes Balears, 2017).

Upon implementation of the tax, many industry stakeholders feared that it would substantially impact the industry in a negative way. However, tourism continued to grow (before COVID-19) in the Balearic Islands despite the tax (CE Noticias Financieras, 2019). Rosselló and Sansó (2017) found that the overall impact of the eco-tax in the Balearics was a 0.4–0.8% decrease in inbound tourist arrivals. This is consistent with the findings of Hudson et al. (2019), whose study of US hotel markets found that demand is not substantially impacted by increases in tourism taxes. When considering the intended impact of the eco-tax, this small decrease may be an indication of some success, as it has controlled tourism arrivals to some degree and generated funds to address the issues that the islands face as a direct result of mass tourism.

UPON IMPLEMENTATION OF the [eco-]tax, many industry stakeholders feared that it would substantially impact the industry in a negative way. However, tourism continued to grow (before COVID-19) in the Balearic Islands despite the tax.

Voluntary instruments

Gili Trawangan, Indonesia

Gili Trawangan is a small island off the coast of Lombok in Indonesia. Since the 1980s, its tourism industry has rapidly developed to cater to party and dive tourists, which has resulted in the island exceeding its carrying capacity (Dodds et al., 2010). Prior to the COVID-19 pandemic, the 6 km² island received up to one million tourists per year (Nelson et al., 2021). Increasingly, locals are concerned about the impact that unrestrained tourism growth may be having on the island environment (Hampton & Jeyachana, 2014). In response to concerns about treatment of the environment and the island's future, the Gili Eco Trust (GET) was established.

GET is a non-profit entity operating out of Gili Trawangan. The trust was established in the early 2000s by the local dive shops to manage challenges associated with the exponential growth in tourism and environmentally detrimental fishing practices (Gili Eco Trust, 2021; Graci & Maher, 2018). The primary facilitators of the eco trust are private businesses, namely the dive shops, since there is little government involvement and these private stakeholders voluntarily opted to collect fees for environmental management (Charlie et al., 2013). The purpose of the eco trust is to "protect and restore the natural environment on the island whilst boosting sustainable tourism" (Gili Eco Trust, 2021). Although it was initially formed to deal with a limited number of problems (e.g., tourism growth, harmful fishing), the eco trust has expanded its scope of operations to support a variety of sustainability related projects. This ranges from biorock reef restoration and reef management (Graci, 2007), improving waste management on the island through recycling and waste diversion techniques (Willmott & Graci, 2012), providing ecotourism experiences that focus on fostering environmental stewardship (Gili Eco Trust, 2021), and holding animal welfare clinics that provide care for cats and working horses on the island (Gili Eco Trust, 2021). Other notable programs include the facilitation of weekly beach cleanups with tourists, coordinating stakeholders for waste removal, and partnering on waste management programs (Graci & Maher, 2018). GET has been identified as an action-oriented (rather than policy and planning) governance organization because of the lack of local government involvement and because of its self-regulating and voluntary nature (Charlie et al., 2013; Erkus-Ozturk & Eraydin, 2010).

The eco trust is funded through a fee which is levied on the recreational users of

Debris-Free Friday is a GET program in which tourists gather to clean the beaches of Gili Trawangan every Friday afternoon. In total each year, tourists, divers, backpackers, and the local community collect around 7,000 kg of marine debris. Photo: https://giliecotrust.com

Gili's marine resources. Locally, this is referred to as the 'dive tax', however it is not a mandatory tax and is entirely voluntary. The levy is $6 USD for divers and $3 USD for snorkelers and is voluntarily collected by all local dive shops on the island (Graci & Maher, 2018). This revenue goes towards staffing the eco trust and implementing their projects (Charlie et al., 2013; Graci, 2007). Although this user fee system is in place, it only collects from dive and snorkel tourists, who account for an estimated 15% of all tourists that visit the island (Nelson et al., 2019). Although the GET has shifted its focus from marine-only conservation to focusing also on waste/land management and conservation, they continue to be funded solely by the 'dive tax' (Nelson et al., 2019).

The Gili Eco Trust represents a grassroots approach to environmental governance and stewardship on the island and employs a variety of environmental instruments to achieve its objectives. This includes the use of an ecotax for funding, as well as voluntary instruments such as donations and educational programmes. The GET has employed an environmental coordinator throughout its existence, who has been able to successfully manage the implementation of projects on the island.

Savusavu, Fiji

Savusavu is a town located in the Province of Cakaudrove on the island of Vanua Levu in Fiji. Although Savusavu is a lesser-known destination in Fiji (Savusavu Tourism Association, 2019), they are working to develop a better tourism economy and differentiate themselves as a unique destination (Graci & Van Vliet, 2020). Savusavu offers marine recreation such as diving and snorkelling, and also has many indigenous Fijian communities surrounding it that partner with resorts to offer indigenous tourism

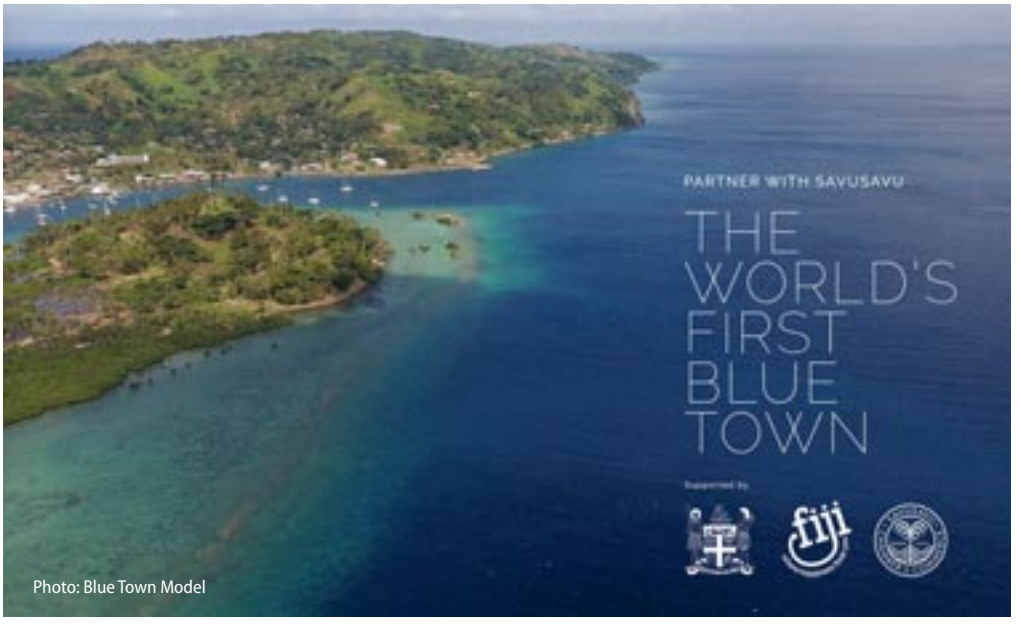


Photo: Blue Town Model

experiences (Graci & Van Vliet, 2020). Savusavu is an extremely seasonal destination, experiencing its greatest demand between May and October (Graci & Van Vliet, 2020). The community is embarking on an ambitious development plan that will transform the local economy to be based on conservation and protection of marine biodiversity rather than extraction, such as in-shore fishing affecting coral reefs (Teh et al., 2009). The plan is called the 'Blue Town model' and is based on the tenets of the circular and 'new' blue economies (Savusavu Town Council, 2019; United Nations Environment Programme [UNEP], 2019).

The *circular economy* refers to "a strategy to reconcile economic growth with sustainable resource use and environmental resource use on a planet of finite resource stocks and waste and emission sinks" (Lazarevic & Brandão, 2020, p. 10). A circular economy is based on value creation, preserving and reducing the material inputs of production, and extending the life and utility of services, components, and materials (Stahel & Clift, 2015). Traditionally, marine environments have been used by heavily extractive industries including those of food (protein), energy, and natural resource extraction, as well as shipping and tourism (Spinrad, 2021). Although there is little consensus on the definition of the blue economy (Carver, 2020), it is generally described as "a knowledge-based economy, looking to the sea not just for extraction of material goods but also for data and information to address societal challenges and inspire their solutions" (Spinrad, 2016, para. 2). A blue economy may emerge when "economic activity is in balance with the long-term capacity of the ocean ecosystems" (Lee et al., 2020, p. 1).

Youths fill up garbage bags during a clean-up campaign in Savusavu in January, 2020. Photo: *FijiSun*

Savusavu's Blue Town model has been developed in response to growing concern for the viability of island destinations in the face of climate change and global depletion of natural resources (Naidu, 2018). The model encourages public–private partnerships to develop a circular economy by pursuing development in seven key areas: renewable energy, recycling and waste management, marine conservation, sustainable livelihoods, eco-tourism, education, and framework (for the Blue Town model itself). If each area is addressed, it will mean that Savusavu has reached its goal in becoming a 'Blue Town'.

The community hopes that it will be a model for other developing island and coastal destinations (Savusavu Town Council, 2019). Specifically, the program will look to

address waste/water management in Savusavu, develop sustainable aquaculture, transition the town to 100% renewable energy by 2030, develop effective coastal management programs, regulate sport fishing, and develop sustainable tourism (UNEP, 2019). The development of infrastructure on the island and conservation programs will be positive for tourism, as Graci and Van Vliet (2020) found that a lack of these initiatives were key barriers to sustainable tourism development in Savusavu. The model will rely on partnerships to deliver results in each key area (UNEP, 2019). The planning document (UNEP, 2019) notes that the development towards the Blue Town model will not only be a benefit to Fijian society but also an advertising and marketing opportunity for all partners involved.

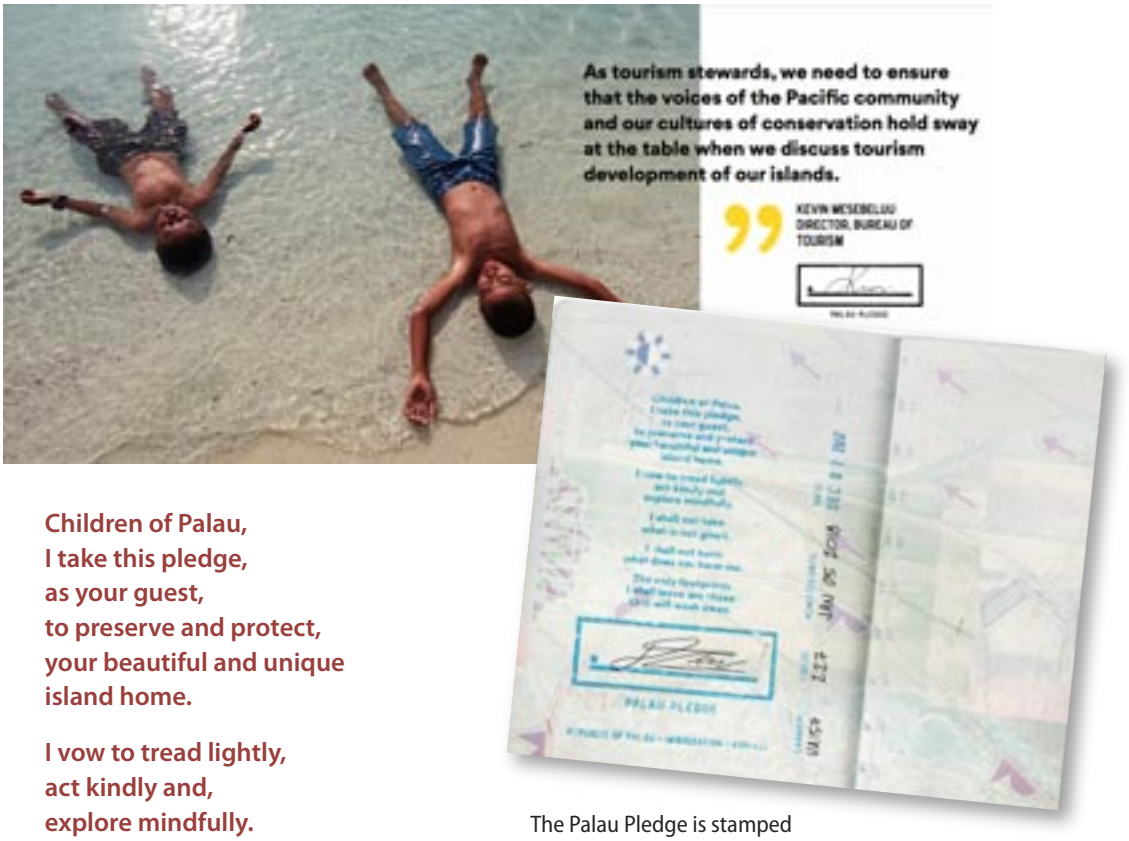
Educational/outreach instruments

Republic of Palau

In response to the growth of low-budget mass tourism, in 2016 the Republic of Palau issued a *Responsible Tourism Policy Framework* to guide tourism development from 2016–2021. This was deemed necessary as the markets visiting Palau began to shift from high-yield niche tourists, especially dive tourists, to low-budget sand, sun, and sea travelers, overwhelming the island's infrastructure and resources (Palau Bureau of Tourism, 2016).

The policy statement sets six targets for diversifying Palau's tourism industry, starting with the alignment of each government sector with the policy needs of tourism. Other objectives include identifying the appropriate carrying capacity for the archipelago and responding with measures to respect that capacity, in order to develop high-value, low impact tourism markets and products, and to align the visitor experience with the 'Pristine Paradise. Palau' brand, increase the share of tourism revenue staying in Palauan communities, and engage Palauan communities in the development of tourism on the islands (Palau Bureau of Tourism, 2016). Each goal has underlying objectives that will be implemented to achieve the goal and impact measurement criteria. To achieve these goals, the Palauan government has proposed adjusting airline access to the island, since this is closely related to carrying capacity. They also suggest implementing appropriate user fees to access sensitive sites and creating education and outreach programs for visitors to help them understand how and why to be respectful tourists.

To support their *Responsible Tourism Policy Framework* (Palau Bureau of Tourism, 2016), Palau has taken a unique step towards promoting responsible tourism on their islands. The island state has changed their immigration laws so that as of December 2017, upon arrival to Palau, all international guests must make the Palau Pledge before an immigration officer (Impact Relations, 2021; Palau Bureau of Tourism, 2021). The pledge (www.palaupledge.com), which is stamped into visitor passports, reads as follows:



Children of Palau,
I take this pledge,
as your guest,
to preserve and protect,
your beautiful and unique
island home.

I vow to tread lightly,
act kindly and,
explore mindfully.

I shall not take
what is not given.

I shall not harm
what does not harm me.

The only footprints
I shall leave are those
that will wash away.

The Palau Pledge is stamped into visitor passports. To date, almost 600,000 people have taken the Pledge.

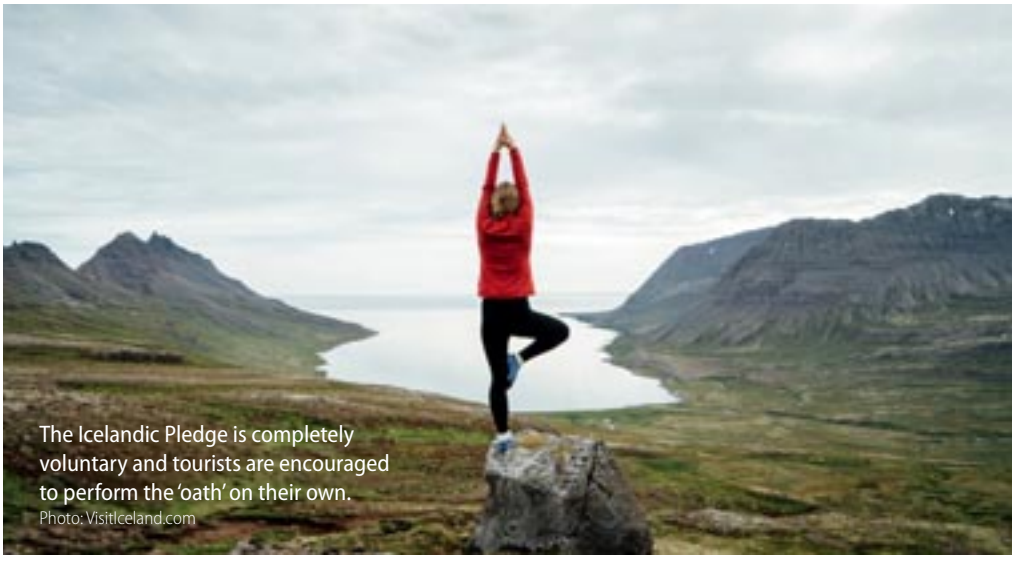
This pledge was developed in collaboration with the children of Palau, and communities continue to be engaged to refine and reimagine the pledge as needed in order to support implementation of the Responsible Tourism Policy Framework. To date, almost 600,000 people have taken the Palau Pledge (Palau Bureau of Tourism, 2021). Although every visitor must sign the pledge on arrival, it is not enforced by any Palauan authority and visitors are effectively in charge of 'policing themselves' based on the emotional connection that the pledge creates between them and the destination (Medel, 2020; Responsible Tourism Education Act, 2018). The goal of the pledge is essentially an educational one (Medel, 2020), as it acts to provide information to tourists on the importance of protecting Palau.

Palauan businesses can also be certified and hold a 'Palau Pledge' eco-label which signifies that the business has met certain sustainability standards. The label also gives them access to a suite of Palau Pledge business resources, including material that will help the business educate their customers about what the certification means and why it is important to support these local, certified businesses. All certified businesses must submit a sustainability report to the Bureau of Tourism for review to maintain certification.

Iceland

Iceland has also created a responsible tourism pledge as a tool to educate tourists and remind them of their responsibility to the destination (Visit Iceland, 2021). In addition to their pledge, Iceland has other mechanisms in place, such as a sustainable certification scheme and conservation and development funds, and is developing comprehensive destination management plans to move the Icelandic tourism industry in a more sustainable direction (Ferðamálastofa, 2021). Unlike the Palau Pledge, The Icelandic Pledge is completely voluntary, and tourists are encouraged to take the initiative to perform the 'oath' on their own. The Icelandic Pledge (www.visiticeland.com/pledge) reads as follows:

1. **I pledge to be a responsible tourist**
2. **When I explore new places, I will leave them as I found them**
3. **I will take photos to die for, without dying for them**
4. **I will follow the road into the unknown, but never venture off the road**
5. **And I will only park where I am supposed to**
6. **When I sleep out under the stars, I'll stay within a campsite**
7. **And when nature calls, I won't answer the call on nature**



The Icelandic Pledge is completely voluntary and tourists are encouraged to perform the 'oath' on their own.
Photo: Visitlceland.com

This oath encourages tourists to consider their actions and highlights some of Iceland's most important challenges with tourists to correct their behaviour. For example, line 4 refers to respecting the integrity of Iceland's flora and fauna, which tourists have damaged in the past (Global CommUnity, 2021).

These types of pledges serve as important awareness-generating tools that can set clear expectations for visitor behaviour (Haugen, 2019). In other words, pledges help communicate norms to travellers who may otherwise be unaware. This helps deal with culture differences to protect local environments and residents from negative impacts of tourism (Haugen, 2019). As is the case in Palau, The Icelandic Pledge is part of a larger pivot towards sustainable tourism development (Haugen, 2019).

DISCUSSION

In order to increase sustainable and regenerative tourism in island destinations, there needs to be a mix of regulatory and non-regulatory environmental instruments. As the case studies in this chapter suggest, economic instruments such as ecotaxes and voluntary instruments such as partnerships and trusts can create change in an island destination. When coupled with opportunities for education and outreach, such as pledges, these initiatives have been highly successful in managing sustainability in island destinations. It is also important to note that this success is attributable to accountability and leadership. As identified by many of the destinations discussed above, it is imperative to have an organization such as an environmental committee or association with a dedicated environmental coordinator in place to manage these initiatives. This ensures accountability and that the funds are used for conservation, sustainable development, and/or regenerative tourism efforts rather than ending up as part of general government revenue.

THESE TYPES OF PLEDGES SERVE as important awareness-generating tools that can set clear expectations for visitor behaviour. In other words, pledges help communicate norms to travellers who may otherwise be unaware.

Educational and outreach initiatives such as pledges are important in ensuring that sustainability initiatives are implemented in an island context. Influencing the decision-making processes of travelers is imperative to encourage more environmentally sustainable choices and drive the growth of sustainable tourism initiatives. Research shows that humans make decisions based on incentives, information, and persuasion, but that they are also significantly influenced by how information is framed and communicated to them (Kamenica, 2012); "Altering the context within which decisions are made can encourage socially desirable behaviours and discourage socially undesirable ones" (Byerly et al., 2018, p. 159). Nudging tourists through interventions, such as collecting a fee or having them take a pledge, are small steps that may incrementally

push someone toward a behaviour without compelling or limiting them in their choices (Kalebekken & Sælen, 2013). Educational and outreach initiatives such as fact sheets, training, and feedback can also nudge industry to action. Working in partnership, the tourism industry may be able to implement initiatives such as sustainability programs, voluntary collection of funds, and customer/employee education (Byerly et al., 2018); these represent a group of strategies that can be used to influence decision-making to produce the desired outcome. Byerly and colleagues (2018) present a model of behaviour change initiatives ('nudges') targeted towards influencing decision-making, and identify that commitments (e.g., explicit goals, pledges, and promises to change behaviour), education (e.g., facts, training, and feedback to increase knowledge), and financial initiatives (e.g., monetary and non-monetary rewards or penalties) are amongst a number of strategies to influence decision-making that may produce the desired outcomes. Environmental instruments, as discussed, can be effective tools and strategies that can be implemented to drive tourists, organizations, and communities towards sustainable decision-making. Further research needs to be conducted on the economic, social, and environmental impact of economic and voluntary/education-based initiatives and how this creates change towards sustainability in a destination.

CONCLUSION

As small islands often have fragile environments with finite resource capacities, it is imperative that innovative economic, voluntary, and educational initiatives be implemented to either complement or lead sustainability initiatives. Stakeholders should work in collaboration towards a common goal of sustainability. Having an accountable organization with a dedicated person leading the implementation of initiatives will also be helpful in ensuring transparency and buy-in from both the tourism industry and tourists. The environmental instruments discussed in this chapter illustrate some concrete initiatives that can be put in place in an island context to fund and address issues such as resource management and conservation, waste management, and community development. This will contribute to the sustainable livelihoods of island destinations and complement government-led regulatory initiatives and/or the private tourism sector.

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We are now only eight years from the 2030 deadline for meeting the United Nations' Sustainable Development Goals. This year's edition of the *Annual Report on Global Islands* addresses the challenges and successes islands are facing in trying to meet these goals. At first glance, one might assume that the ongoing COVID-19 pandemic would further hinder the ability of island governments to focus on longer-term issues related to sustainable development. However, as shown from the contributions in this book, the experiences and the answers are more complex and nuanced. In some cases, and with respect to certain goals, island stakeholders and decision-makers have viewed this crisis as an opportunity to make their islands more resilient to future extreme events. Not only does this help them respond to the next public health crisis, it may also have positive spillover effects that will benefit the overall well-being of island populations and the physical environments of islands.

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