KPMG

Net zero readiness spotlight: Islands

The rise of small island economies — beyond net zero, attracting private capital.

home.kpmg/NZRSislands | November 2022

Contents

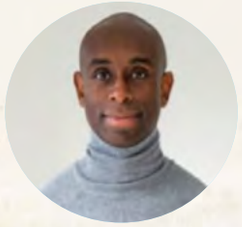
Foreword

Small island economies are at the forefront of climate change. Their economies and livelihoods are already impacted by the effects of a changing climate due to rising sea levels, increasingly frequent and more powerful storms, reduced access to drinking water and damage to ecosystems. Climate change presents an existential risk to many of them. Living in a small island economy means being more aware than most of the risks and opportunities the oceans and wider ecologicial ecosystem bring.

Several of these small island economies are at the forefront of tackling climate change. Many are shifting to renewable energy generation and electric vehicles while setting net zero target dates, which is an essential step for jurisdictions to play their part.

This publication presents some of the innovative approaches governments are taking, including Barbados installing solar panels on social housing to subsidize rents, Singapore's public housing provider commissioning thousands of vehicle charging points for its carparks, and Malta making bus trips free for residents to encourage use. Financial sectors are taking fresh approaches also, with Fiji pioneering green and blue sovereign bonds, the Crown Dependencies developing sustainable finance ecosystems, the Cayman Islands' involvement in innovative fund products, and Bermuda building on its experience in catastrophe risk insurance.

I'm delighted to present this spotlight edition of the net zero readiness series and hope you enjoy the read. My sincere wish is that it will inspire action by private and public sector actors, both individually and collectively. While the challenges climate change bring are great, the engagement with public and private sector, during the course of this study, transpired a willingness to share insights, to act, and to seize resulting opportunities that will support the rise of the small island economies.



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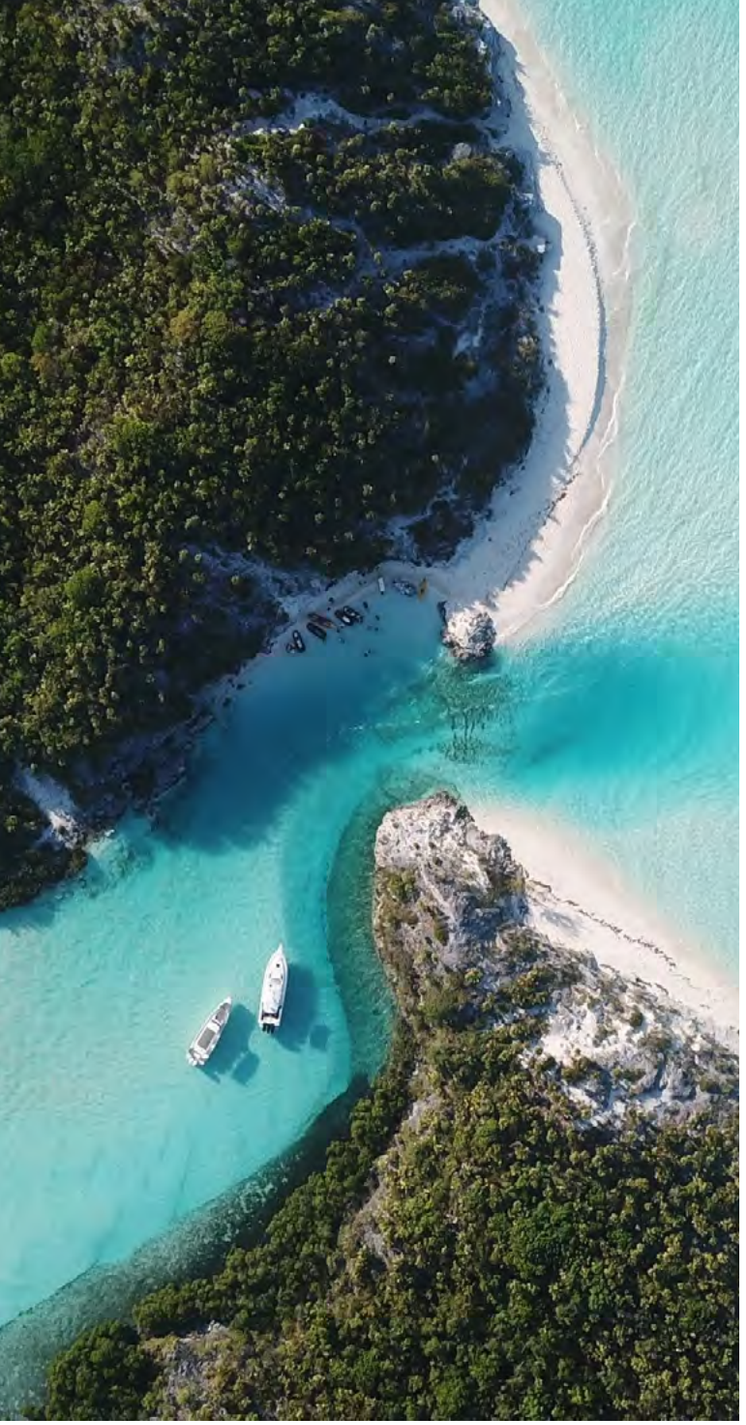

Acknowledgments

This report is a joint effort, involving CREATE-Research and many KPMG colleagues from KPMG Islands Group and the broader KPMG network.

This report examines in detail the readiness of small island economies in transitioning to net zero. An assessment of 36 small islands economies has been performed, as well as structured interviews with investors. The report also provides examples of practices that are already deployed by small island economies.

A special thanks to Professor Amin Rajan, CEO of CREATE-Research, and his team for their excellent support towards the investor research. The interviews they performed with 24 large institutional asset managers and pension plans (representing USD28.7 trillion of assets under management), provide a unique investor perspective on the role capital markets can play in the transition to a low-carbon world. Thank you to the CEOs, CIOs and board directors who participated in the structured interviews.

Special thanks also go to the members of the project team, editorial board and other colleagues around the world who helped carry out this research, in particular Ben Blair, Jodie McTaggart, Katya Bennett and Kirsty MacGeoch from KPMG Islands Group.

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Executive summary

Key takeaways

Small Island Economies (SIEs) are working to respond to the threat of climate change, yet funding remains a challenge for many

1. Small Island Economies (SIEs) are on the front line of climate change. All economies have a national ministry or department focused on climate change, however, they are at various levels of preparedness.

2. Most economies in this research have policies in place for sustainable development and many are taking innovative approaches to climate change, including being early adopters of sustainable finance.

3. More than half of the economies in this research get less than 10 percent of electricity from renewable sources, with electrification of transport being an area of focus.

4. Among the economies in this research only Fiji, Guernsey and the Isle of Man have a net zero commitment in law. A further seven have a net zero target as a declaration, pledge or policy: Antigua and Barbuda, Bahrain, Barbados, Jersey, Maldives, Malta and Singapore.

5. Barbados and Maldives have the most ambitious net zero target dates of 2030, with Antigua and Barbuda setting a date of 2040. More than half of the economies in the research have set 2050 as their target date.

The global capital markets could help to provide SIEs with a solution, though action is needed to enhance their appeal

6. Global capital markets are turning their attention to climate investing. Yet, SIEs do not currently feature in the investment portfolios of global capital market players, despite this being a USD3 trillion opportunity.

7. SIEs are caught in a Catch-22: they can't attract private capital because they have a limited track record, and they have a limited track record because they can't attract enough private capital. There remains a mismatch between what private capital requires and what these island economies can deliver.

8. The challenges that SIEs face cannot be resolved by capital market players alone. They need other players to act as flywheels that generate and accelerate private capital inflows over time. This would require a twin-track 'build back bluer' development strategy.

9. A twin-track 'build back bluer' development strategy should aim to de-risk opportunities for private investors in climate adaptation and mitigation projects via two avenues; bonds with backstops from multilateral institutions and blended finance vehicles that also involve philanthropists willing to provide catalytic finance.

10. Climate adaptation and mitigation projects could be part of an overarching strategy that aims to enhance three key enablers that can attract the inflow of private capital; a more conducive political environment, a credible national strategy on net zero and favorable business practices.

Aims and research methods

This report assesses 36 small island economies (SIEs) on their relative preparedness and ambition to achieve net zero, and their ability to attract private capital to fund the transition to a sustainable economy. SIEs differ widely in population, from around 15,000 to more than 10 million; in wealth, with gross domestic products per person between USD2,400 and USD113,000; and in status, with some recognized as countries and others territories or dependencies. However, all face similar challenges from a changing climate. KPMG has selected the 36 based on geography and availability of data, with representatives from Asia, the Atlantic, the Caribbean, Europe, the Indian Ocean, the Middle East and Oceania.

This report is comprised of two areas of research. The first being a country profile analysis of 36 SIEs assessed across 19 different indicators, with details provided in the methodology (p52). The second area of research is focused on the investor perspective and the steps SIEs need to take to attract private capital. This investor perspective is jointly prepared by KPMG International and CREATE-Research (p11), based on interviews with decision-makers at 24 large institutional asset managers and pension plans that manage USD28.7 trillion of assets.

The indicators used in the country profile analysis evaluate the preparedness of these island economies on four pillars: (1) Contribution to decarbonization, (2) Drivers of emissions, (3) Policies and enabling environment and (4) Energy supply and use. A summary of the results is on p8. As with the KPMG Net Zero Readiness Index, first published in 2021, this report uses the World Resources Institute definition of net zero.*

Furthermore, there are countries and territories included for The Bahamas, Barbados, Bermuda, the Cayman Islands, each of the three Crown Dependencies (Jersey, Guernsey and the Isle of Man), Fiji, Jamaica, Maldives, Malta, Singapore, and Trinidad and Tobago. The profiles cover governmental work on net zero, energy, transport and business and include insights from KPMG subject matter professionals. Each profile highlights a project or policy which supports that economy's preparedness, such as Fiji's green and blue sovereign bonds and Singapore's Green Plan 2030.

The rest of this section gives the highlights of country analysis and the investor survey results, followed by detailed findings that support the key takeaways.

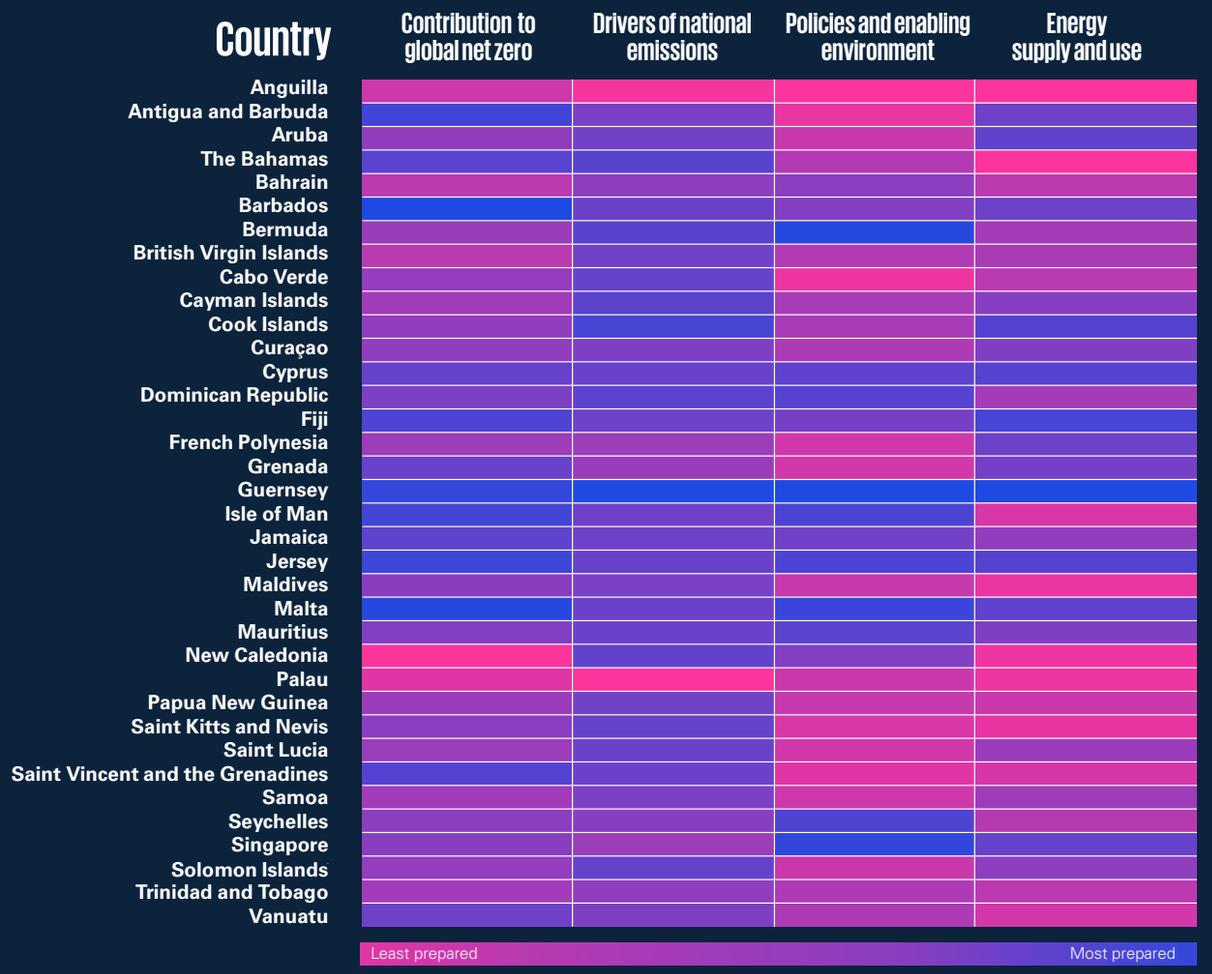
Results presented in this report from the investor survey are insights derived from interviews, except where referenced to an external source. Monetary amounts are all in US dollars, unless otherwise indicated.

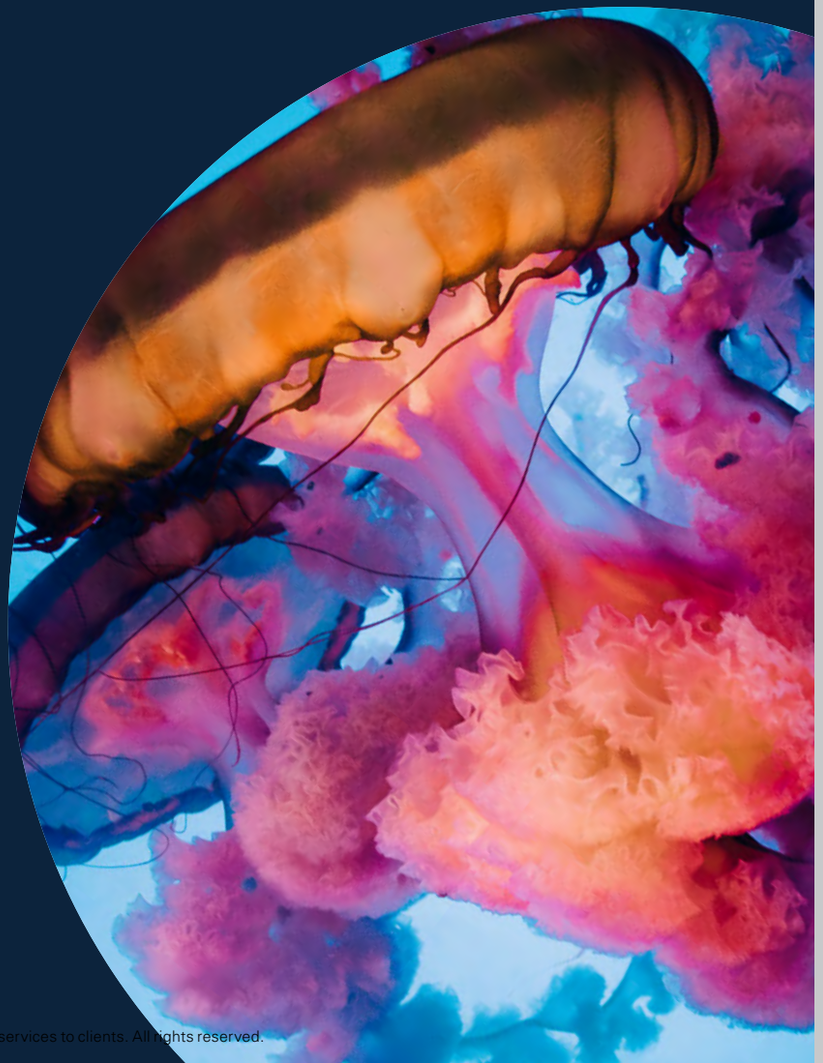
* Primarily, this involves reducing greenhouse gas emissions caused by humans as close as possible to zero. Remaining emissions are balanced by an equivalent amount of carbon removal from the atmosphere, effectively neutralizing humanity's future impact on the world's climate. The main greenhouse gas is carbon dioxide, and work towards net zero is often called 'decarbonization' to reflect the focus on this gas, which is released when fossil fuels are burnt. However, emissions of methane and nitrous oxide also make significant contributions to climate change.

Survey highlights

Country profile

Overview of the relative preparedness and ambition to achieve net zero emissions.





Survey highlights of the investor perspective

The capital markets can play a key role in funding the net zero ambitions of SIEs. The survey participants, comprised of decision makers at 24 large institutional investors and pension plans together managing USD28.7 trillion in assets, have provided insight into the reasons global investment portfolios are underweight in SIEs and the actions SIEs may take to change.

(percent of survey participants)

Why are global investment portfolios underweight in SIEs?

77%

Have embedded the net zero goal in their investment portfolios or are now doing so

79%

Target uncorrelated returns in a diversified portfolio

67%

Target good risk-adjusted long-term returns, which SIEs are currently unable to offer

63%

Have yet to consider SIEs as a favorable destination for their investments

What features of SIEs are cause for concern to capital market players?

87%

Are concerned about political instability, which could cause business instability

67%

Are concerned about the default history of many SIEs, and therefore require a higher hurdle rate of return

68%

Perceive there to be a lack of projects on renewable energy and carbon sinks in SIEs

60%

Are concerned about SIEs' overexposure to rising sea levels and ocean acidification

Which actions will enhance the appeal of SIEs as a destination for private capital?

88%

Would like to see a net zero strategy for SIEs that articulates the role of private capital

88%

Would invest in green bonds underwritten by a multilateral institution

71%

Would consider investing in blended finance projects on renewable energy

67%

Would like SIEs to adopt international standards to monitor progress on blended finance projects

02

Detailed findings

Country profiles

Islands: The climate front line

SIEs are on the front line of climate change. By definition, their citizens live close to the ocean and rising sea levels, especially on very low-lying islands in the Indian and Pacific oceans. Increased storms caused by climate change, such as in the Caribbean, threaten people's lives, homes and livelihoods. Many have experienced the recent, direct effects of severe storm damage. As a result of this and other impacts, the risks of climate change are already more evident in SIEs than in many other countries.

The report published by the Intergovernmental Panel on Climate Change (IPCC) in February 2022 on impacts, adaptation and vulnerability noted that "a sense of urgency is prevalent among small islands in combating climate change."[1] The document, which is based on current science and agreed upon by governments, said that 22 of 29 Caribbean islands were affected by a category four or five tropical cyclone in 2017, with Hurricane Maria destroying nearly all of Dominica's infrastructure and causing losses equivalent to more than two years of gross domestic product.

Other changes are taking place more slowly but with significant effects. Temperature increases, drought and changing rainfall patterns have impacts, including reduced fresh groundwater levels on several islands. Other local environmental problems include coral bleaching, particularly in the Pacific and Indian oceans, and invasive species damaging the ecosystems of islands.

The IPCC report said that while coastal flooding will vary depending on location, sea level rises of 5–10 centimeters predicted between 2030 and 2050 will double the frequency of flooding in many parts of the Indian Ocean and tropical Pacific. It also expects further increases in storm damage and resource reductions, including drinkable water, agricultural production and fishing catch. Even if global temperatures rise by just

1.5 degrees Celsius, "the reduced habitability of small islands is an overarching significant risk," it said. It noted that small islands have "the most urgent need" for investment in capacity building and adaptation work, but in many cases, work does not match the scale of what is required. However, international climate finance has increased in magnitude, and some small islands have started using insurance and microfinance to adapt and build resilience.

SIEs taking innovative approaches

Some SIEs are more economically advanced than others. Although the remainder cover a comparatively small land area, their importance is vastly enhanced by the United Nations Convention on the Law of the Sea.[2] It grants exclusive rights to exploration and the use of vast marine resources within a radius of 200 nautical miles from their shores. As a result, they control around 30 percent of all oceans and seas, hosting considerable reserves of minerals, sea food, natural gas and much more.

Interviews for this report with KPMG member firms' professionals have shown that many SIEs are taking innovative approaches to climate change's challenges and opportunities. For example, several SIE governments have become champions of work to tackle climate change, such as Barbados, which is planning to move to 100 percent renewable energy by 2030, Fiji, the first SIE to adopt a legally-binding net zero target, and the Maldives, which is trying to decarbonize entirely by 2030. They are also ideal locations for working on new ideas and technologies for tackling climate change, such as the award of an Earthshot Prize to a project in The Bahamas to grow coral on land, and the use of ocean and shoreline environments for mitigation work such as carbon sinks.

Most SIEs are not connected to international electricity grids or gas pipelines, except in the Channel Islands and Malta. Outside of Trinidad and Tobago and Bahrain, SIEs generally import fuel by sea, with many generating electricity from diesel or other oils. However, several have set specific targets to move to renewable electricity generation.

Similarly, most goods must be imported at a high cost. This encourages governments to develop solutions such as solar generation that increase energy resilience and self-reliance. Some, including Malta (with the Melita gas pipeline) and Barbados (with the Clean Energy Bridge diesel power station), have or are developing energy transition projects as an interim step. The Cayman Islands is also seeking to tackle climate change through local banks offering loans for hybrid and electric vehicles, solar panels or batteries, and energy smart shutters, on favorable terms.

In several interviews, a key message is that governments have good intentions, but need better and more holistic planning and, in many cases, better costing to achieve their net zero targets. Some countries like the Isle of Man set their net zero targets, while others rely on interim targets as a steppingstone. Given the small size of many SIE governments, many are likely to have capacity problems creating and implementing policies in this area, and attracting funding to support such work.

The scale to innovate

The small population size of SIEs means that relatively small, quick-to-implement projects can significantly contribute to national decarbonization. For example, some SIEs are shifting to all-electric public transport through a relatively small order of electric buses; introducing electric vehicles, such as Bermuda for previously- banned tourist hire cars; or making a significant shift from fossil fuel electricity to renewables through a single project like Trinidad and Tobago's Lightsource BP deal or Jamaica's Wigton wind farm.

SIEs tend to be comfortable with economic specialization. Most have one or two major export-focused industries such as financial services or tourism to cover the imports they require. These industries require governmental focus, such as providing appropriate financial regulation that maintains trust without stifling innovation. That has allowed governments, including Guernsey and Jersey, to be early adopters of ESG in finance.

Similarly, the importance of international businesses to the Isle of Man gives it an excellent reason to develop renewable energy supplies to cater to corporate net zero targets. Several SIEs are focusing on new opportunities that climate change generates, including Bermuda setting catastrophe insurance, the Cayman Islands launching innovative fund products, and Fiji pioneering green and blue sovereign bonds.

> **"The role of governments is to promote and incentivize the transition to clean energy. Governments should set a clear strategy and lead the initiative; capital market desire to invest will follow."**
>
> **An interview quote**

Global capital markets turn to climate

The global capital markets may offer SIEs with a solution to their funding challenges. Yet, despite attracting a wall of money, global capital markets are failing to price in climate risks due to policy confusion and a lack of clarity on financial impact.[3] Progress is more evident in public equities because the stewardship opportunities they offer are now believed to be critical to value creation in the transition to a low-carbon future. In SIEs, there is also a mismatch between what private capital requires and what can be delivered. "Their economies are on the front line of climate change and the need for private capital to address the forces of climate mitigation and adaptation have never been greater" said Anthony Cowell, Senior Advisor, KPMG Islands Group.

The opportunities and risks inherent in climate change have also been globally hard to assess for the capital markets. As yet, no jurisdiction has an established set of rules that properly integrate environmental and social costs into companies' financial reporting, particularly in ways that can assist the price discovery of climate risks. Because of this, market-based incentives and investment in low-carbon technologies have been slow to evolve. Progress is also hindered by the lack of uniform carbon price in the current generation of emissions trading systems, which remain at the forefront of tackling climate change.

However, two events are noted as being critical turning points for the global economy and SIEs. One is the new green agenda of the key economies, involving, among others, the adoption of clean energy standards, the mandatory reporting of the carbon footprint of listed companies and a revision of the fiduciary rules on the inclusion of environmental, social and governance factors in the portfolios of pension plans. The other is the call to action from the United Nations.

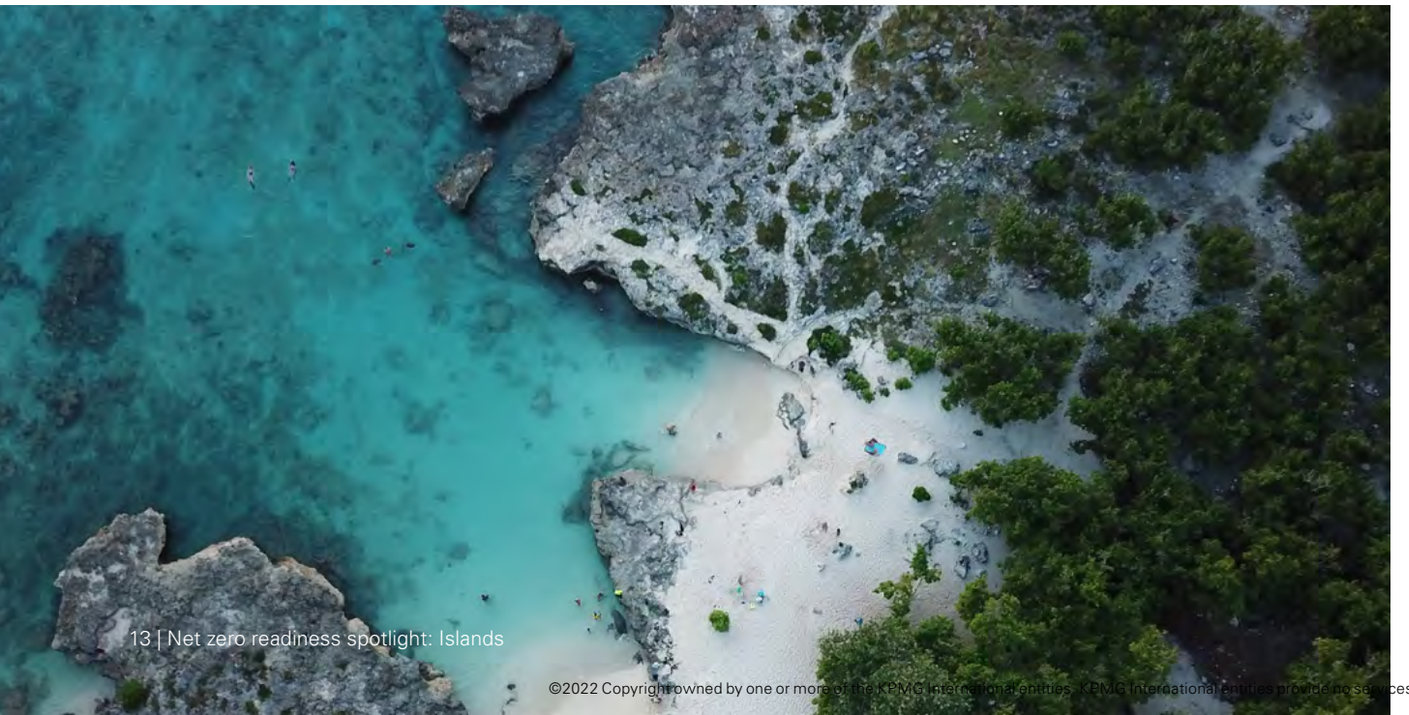
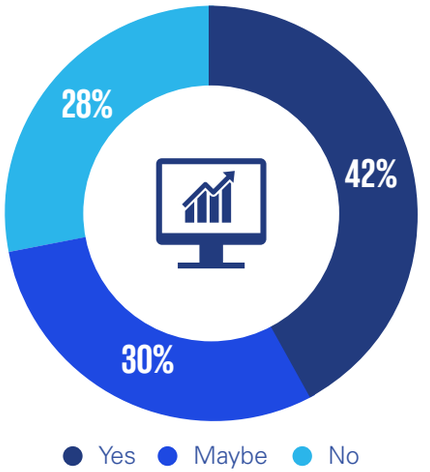
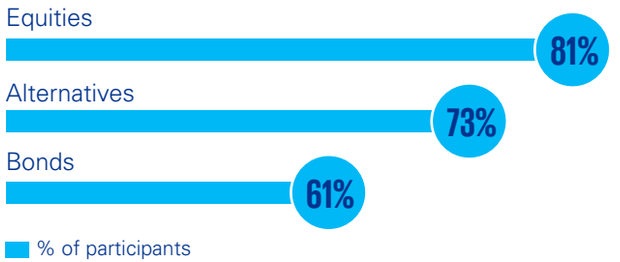


Figure 1: Do you expect capital markets to start factoring in climate risk on a notable scale over the next three years?



Source: Can capital markets save the planet? (2021) by KPMG International, the Chartered Alternative Investment Analyst Association and CREATE-Research.

Figure 2: Over the next three years, which asset classes are likely to advance further towards pricing climate risk?



Source: Can capital markets save the planet? (2021) by KPMG International, the Chartered Alternative Investment Analyst Association and CREATE-Research.

More coordinated intergovernmental actions are likely, and capital markets are bracing themselves for more substantial tailwinds following progress on three key fronts: carbon pricing, innovation in alternative energy and mandatory data reporting. Channeling trillions of dollars of capital toward the technologies needed to power a low-carbon economy requires a vast, concerted effort in policy and incentives. Without these, some fear that if the policy inertia of the recent past continues, allowing risks to build up in the global financial system, it could result in a 'Minsky moment' collapse in securities prices.

A USD3 trillion opportunity for SIEs in search of leverage

The unique economies of SIEs have two interlinked aims. The first is to protect ocean resources by coupling sustainability with aquaculture, biotechnology, fisheries, offshore wind, solar energy and coastal tourism. The second is to explicitly put these activities at the heart of climate adaptation and mitigation activities, as the planet progresses towards the net zero goal adopted atcThe UN Conference of the Parties (COP26) in Glasgow in 2021.

The oceans of the world could provide a sustainable blue economy that aims to promote economic growth, social inclusion and the improvement of livelihoods while maintaining environmental sustainability. The oceans are rich in their natural capital of phytoplankton, which produce over half the world's oxygen and absorb 50 times more carbon dioxide than terrestrial plants.[4]

In 2010, the gross value added by the sustainable blue economy amounted to USD1.5 trillion, a figure that is likely to double by 2030, according to the Organization of Economic Corporation and Development.[5] SIEs are well placed to tap into this.

In order to harness this potential, *Blue Economy Finance Principles* have been adopted since 2018 by multilateral institutions, and other organizations such as the European Commission, the European Investment Bank, the WWF and the World Resources Institute. They define best practice in financing economic activities that enhance the resilience of a sustainable blue economy, while promoting climate action and preserving the health of the ocean ecosystem. They rest on the view that you can't go 'green' by ignoring 'blue'.

As such, the Principles provide the world's first guiding template for attracting capital from banks, insurance companies and private investors seeking decent long-term returns by investing in this economy. They aim to channel capital into projects that seek to reduce carbon emissions and pollution, promote energy efficiency, halt the loss of biodiversity and harness the untapped potential of oceans across the globe.

Thus far, the climate change adaptation and mitigation projects of the SIEs have largely relied on financial assistance from multilateral institutions like the World Bank, the International Monetary Fund and the European Commission. They are now actively seeking to leverage that by attracting private capital from global capital markets managing USD123.5 trillion in bonds and USD105.8 trillion in equities, according to the 2021 Capital Markets Fact Book.

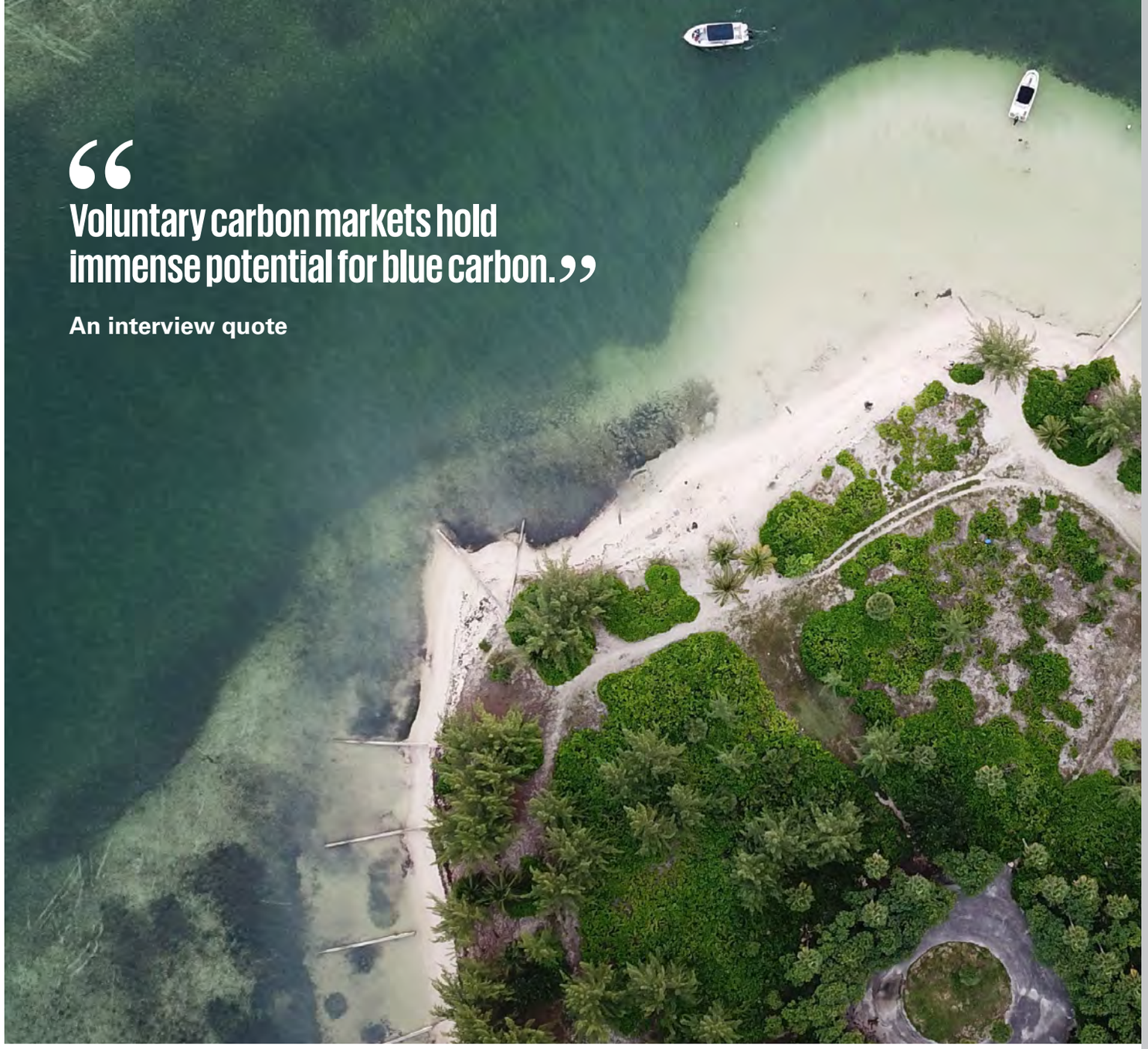
A modest allocation towards climate adaptation and mitigation projects in SIEs could potentially have a disproportionate impact in global action on climate change. In particular, most of the SIEs already have energy transition objectives and plans in place. SIEs have always been successful at attracting private capital — as inward investment — to the more traditional sectors of their economy, such as offshore drilling, shipping and fishing. Their aim now is to repeat that success as they embark upon the transition to a low-carbon world.

Following COP26, two principal groups of capital market players have been embracing the 2050 net zero goal, in line with the 2015 Paris Agreement; namely pension plans and asset managers.

Accordingly, their portfolios are now seeking to reduce carbon emissions while actively ensuring that residual emissions are fully offset via natural carbon sinks, such as forests and oceans, or via technologies like carbon capture, storage and utilization, or both. Their aim is to reduce greenhouse gas emissions caused by humans as close as possible to zero, with residual emissions balanced out by an equivalent amount of carbon capture from the atmosphere.

Carbon removal and sequestration activities, whether through technologies or nature-based solutions such as forests or mangroves, are growing in popularity. Most carbon removal activities are land-based, where it often takes many years to establish and, in some cases, only removes carbon from the atmosphere for a few decades. Currently, offshore carbon projects are limited in number. Still, mangroves, salt marshes, coral reefs and seagrass meadows look to be effective at removing carbon while providing other benefits, such as storm protection.

For some SIEs, the potential for blue carbon sequestration could exceed their carbon emissions. Island economies could partner with other countries that need to offset emissions, providing SIEs with income while helping others meet climate targets. "The full potential of carbon removal solutions is becoming very apparent to governments and the business community, and even at this early stage, institutional investor interest can be observed," said Mike Hayes, Global Head of Climate Change and Decarbonization, KPMG International. "We are witnessing the beginnings of a new industry that is likely to grow exponentially as the climate crisis becomes more real."



> **"Voluntary carbon markets hold immense potential for blue carbon."**
>
> **An interview quote**

The investor perspective

The results in this section are based on a survey conducted by CREATE-Research. Via structured interviews CREATE-Research canvassed the views of top decision makers at 24 large institutional asset managers and pension plans, who are among the key players in global capital markets. Together, these investors currently manage USD28.7 trillion of assets. The survey results were further corroborated by interviews with climate finance professionals at the Impact Investing Institute, the OECD, Planet Tracker, the UN Environment Programme and the UN Principles for Responsible Investment.

create

> “Our net zero goal is cast in stone, even if overall progress on the Paris targets is slow.”

An interview quote

Investors have embarked on the net zero journey in earnest

In terms of the traditional adoption cycle, 18 percent of survey participants have already embedded the net zero goal in their investment portfolios; a further 59 percent are in the process of implementing it; and 23 percent are considering doing so (figure 3). Hence, for just under four in every five participants, the net zero goal is an essential feature of their investment portfolios. They have now embarked on a journey in search of opportunities that can deliver that goal.

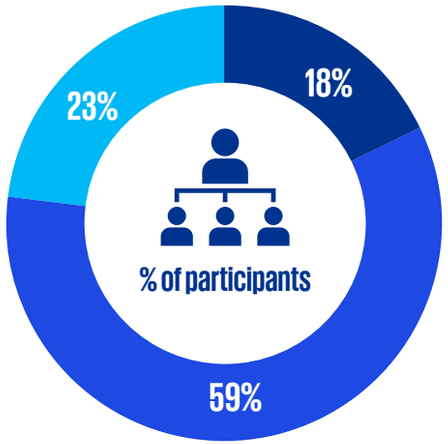
According to the research, far and away, the most important vehicle used on this journey is stewardship. It relies on year-round engagement with carbon polluters and proxy voting at their AGMs. This is in the belief that those who are part of the problem can also be part of the solution in replacing fossil fuels with green energy. Their aim is to ensure that pension capital is greening the portfolio and, more broadly, the planet.

The majority of participants are also excluding carbon polluters from their portfolios. Others go a step further by overweighting green energy. A minority rely on impact investing that targets a double bottom line: doing well financially and doing good environmentally.

For all survey participants, the net zero journey is the single biggest collective human endeavor to help

ensure that global warming is contained at levels well below the tipping point at which the planet is permanently locked onto a high-temperature trajectory.

Figure 3: In which stage is your organization currently with respect to adopting the net zero climate goal?



Source: KPMG/CREATE-Research Survey 2022

SIEs have yet to feature on the net zero journey

SIEs have not yet attracted interest on a scale commensurate with their centrality to the sustainable blue economy. Private capital has yet to recognize that SIEs are on the front line of climate action, as overexposed as they are to the effects of global warming (figure 4).

So far, 37 percent of participants have invested in them and 63 percent have yet to consider them as a favorable destination for their assets.

In cases like Belize and the Seychelles, investments have been channeled through blue bonds that have sought to restructure existing debt. Elsewhere, sovereign bonds have been more common.

A key reason for the implied underweight position is that, as yet, SIEs are not seen as being capable of delivering various portfolio goals targeted by global investors in accordance with their fiduciary duty under the prevailing regulation in their domestic jurisdiction. The duty enjoins them to target various mutually supportive benefits for end-investors (figure 5).

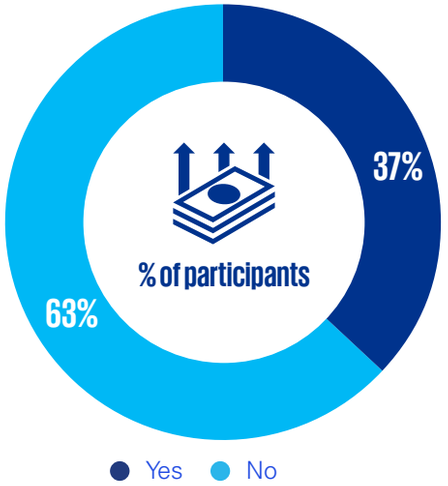
Key benefits include uncorrelated returns (79 percent), double bottom line (71 percent) and good risk-adjusted returns (67 percent).

These are to be achieved within a diversified portfolio, with low volatility in returns (54 percent) and hedges that protect against fat-tail/far-off risks associated with global warming (17 percent). Commitment to addressing climate change is also important (38 percent).

Even in Europe, the most pro-climate regulatory framework does not enjoin investors to sacrifice returns while pursuing their climate goals.

The overwhelming emphasis on financial returns reflects the fact that survey participants see themselves as stewards of other people's money. The focus on diversification, in turn, reflects the fact that climate change is Janus-faced. It offers opportunities as the global economy transitions towards a low-carbon future but the implied adjustment is also laced with risk as many climate laggards are likely to struggle in the transition phase.

Figure 4: As a part of your net zero goals, has your organization considered investing in or already invested in SIEs to achieve its investment goals?

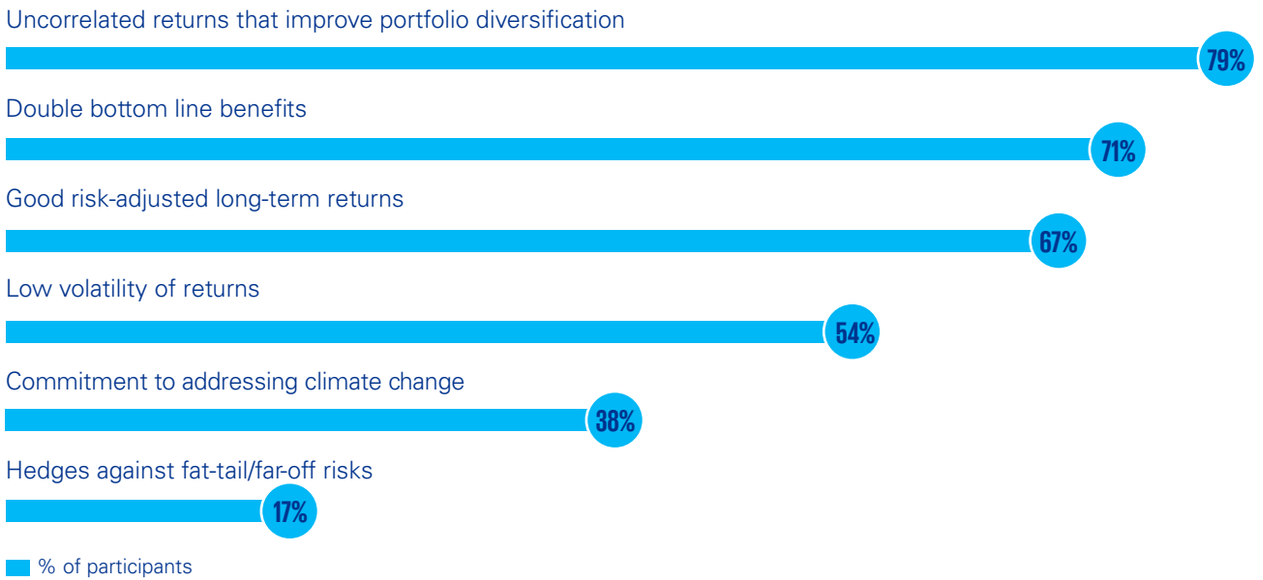


Source: KPMG/CREATE-Research Survey 2022

This overall emphasis on financial factors reflects two considerations. First, 'green' investments suffer from three downsides: their upfront capital requirements are high, payback periods are longer and sensitivity to policy changes and technology risk is high. Second, the turbulence in the global financial markets in the first half of this year is activating 'risk-off' trades, after an extended 'risk-on' phase that started in the wake of the severe market correction at the outset of COVID-19 in March 2022. Capital conservation has raced up on the agenda of survey participants.

> "The natural capital of the oceans does not feature in our conversations — yet."
>
> **An interview quote**

Figure 5: What specific benefits are your organization targeting from its net zero journey?



Source: KPMG/CREATE-Research Survey 2022

There is a mismatch between what private capital requires and what SIEs can deliver in return

Thus far, the funding model driving climate-related investments in SIEs has primarily relied on public and philanthropic sources. The flow of private capital in SIEs has been constrained by various factors — some specific to capital owners, some to SIEs themselves.

a. Constraints faced by private capital owners

The implied low level of interest is explained by the fact that 63 percent of participants want to see a track record on the opportunities that have prevailed and 63 percent again like to have a clear exit strategy before committing capital. Around 62 percent tend to invest in deep liquid markets where market makers have the customary obligation to act as buyers of last resort if a strategy comes unstuck. SIEs have limited deep liquid markets. The above considerations are dictated by fiduciary duty that mostly favors investment strategies that have been tested by time and events.

The implication is that SIEs are caught in a Catch-22: their ability to attract private capital is constrained because they have a limited track record of success, and they don't have the requisite track record because they have not been able to attract enough private capital.

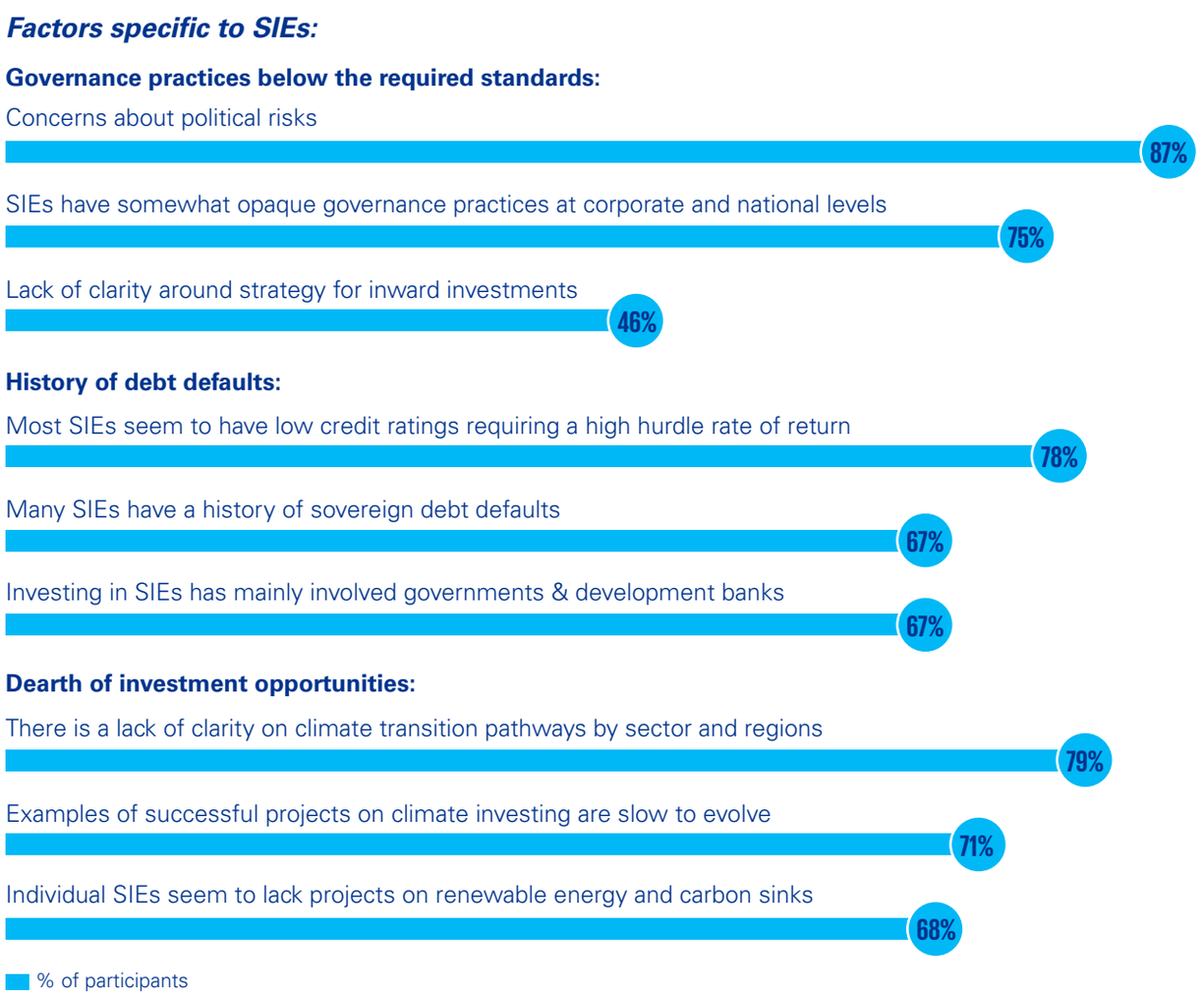
Thus, the blue economy continues to lag behind its terrestrial counterpart in attracting private capital into newer sectors on the front line of climate adaptation and mitigation action.

Indeed, 83 percent remain unaware of worthwhile investment opportunities in the sustainable blue economy in general and in many SIEs in particular (shown in figure 6).

Figure 6: What factors are currently constraining your organization from investing in SIEs?

Source: KPMG/CREATE-Research Survey 2022

Figure 7: What are the top three factors currently constraining your organization from investing in SIEs?



Source: KPMG/CREATE-Research Survey 2022

b. Constraints faced by SIEs

Three sets of constraints have conspired against portfolio investments in SIEs (figure 7).

First, their governance practices are deemed to be below the required standards: 87 percent cite political risk as the key one and 75 percent worry about opaque governance practices.

Second, many SIEs have a history of debt defaults, according to 67 percent (figure 7, second panel). This gives them a sub-investment grade rating, which requires a high hurdle rate of return, according to 78 percent. As a result, the culture of blended finance that can leverage private capital has been slow to evolve. Hence, investing in SIEs is seen as a bilateral proposition, involving island governments and multilateral bodies, such as the World Bank and regional development banks, offering grants and concessionary finance relying on below-market interest rates and/or outright grants (67 percent). Thus far, concessionary finance to SIEs has been largely driven by allocations to a few countries and mostly in response to emergencies and one-off interventions.

> **“SIEs need a fund structure that can generate decent returns. Currently returns are not in the equation.”**
>
> **An interview quote**

Third, there is a strong perception of a dearth of concrete investment opportunities (figure 7, third panel). This is indicated by the lack of clarity on net zero pathways by sectors in many SIEs, according to 79 percent of participants. Nor is it clear whether the pathways are backed by the 'shovel ready' projects on renewable energy and carbon sinks that are of greatest interest. Thus, 71 percent believe that examples of successful projects on renewable energy and carbon sinks are slow to evolve. Indeed, 68 percent perceive lack of projects on renewable energy and carbon sinks.

Part of the problem, much lamented by many SIEs, is that the USD100 billion of financial aid promised at COP21 in 2015 has yet to materialize. What has been made available has come in the form of loans, not concessionary grants that could be leveraged to attract private capital within a blended finance package.

SIEs need a twin-track 'build back bluer' development strategy that partially de-risks opportunities for private capital

The challenges faced by SIEs cannot be resolved by capital market players on their own. They need other players who can act as flywheels that generate and accelerate the private capital inflows over time. This argues for a twin-track strategy: one involving bonds and one involving blended finance. Both constitute distinct opportunity sets.

One track envisages multilateral bodies such as the World Bank or regional development banks issuing bonds to support lending for eligible climate-focused projects in SIEs. With the backing of a multilateral institution, such bonds can provide the liquidity and collateral required by capital market players. In this context, green bonds are the most favored asset class by 88 percent of survey participants, followed by blue bonds at 83 percent, social development bonds at 42 percent and sustainability-linked bonds at 33 percent (see figure 8).

Blue bonds are a relatively new feature. Their proceeds are earmarked for conserving, improving, and restoring marine and coastal ecosystems such as coral reefs and wetlands, often collectively referred to as 'green infrastructure,' that rely on nature-based solutions to provide flood defenses.

The second track involves bigger long-horizon projects that specifically target measurable commercial as well as environmental benefits.

Two areas are held up as being especially attractive (shown in figure 8, second panel); one is carbon sinks that sequester emissions and enable SIEs to be important players in the newly evolving cross-border carbon offset market (cited by 79 percent); and the other is renewable energy that reduces imports of fossil fuels (71 percent). Both aim to capitalize on the unique natural endowment and geography of SIEs. Given the scale and the time horizons of such projects, blended finance is an ideal vehicle for using public funds to de-risk and crowd in private capital for pioneering projects in new industries and technologies.

Blended finance projects of key interest to private capital will have two design features; a multilateral institution providing concessionary finance below market rate and a mission-based investor, such as an endowment or philanthropist, who is seeking tangible positive impacts by providing catalytic finance in the form of debt, equity guarantees and indeed other investments that accept disproportionate risk or concessionary returns relative to a commercial investor. The main aim is to generate positive impact and attract private capital that might not otherwise be forthcoming.

Figure 8: What does your organization see as key areas of net zero related investment opportunities in SIEs?

Source: KPMG/CREATE-Research Survey 2022

Breaking out of the Catch-22 requires SIEs to take action in three mutually supporting areas

Thus far, SIEs have been successful in attracting developmental finance from multilateral institutions. Survey participants believe that it is time to build on that by crafting a credible strategy — or revisiting an existing strategy — that explicitly targets private capital. The aim is to present a checklist of things that matter to potential commercial investors, so that it can be used by SIEs to conduct a reality check on their current plans and perform course corrections if and where necessary. The checklist is presented in figure 9, in three mutually supporting clusters.

The first cluster seeks to create the kind of political backdrop and social cohesion that are valued highly by the credit rating agencies used by capital market players when allocating their assets. Political stability and having laws and legal recourse are critical for raising the confidence levels of investors.

The second cluster argues for having a credible net zero strategy at the national level in ways that articulate the complementary roles of blended finance and global capital markets in undertaking projects on carbon sinks and renewable energy, including solar, wind, geothermal, tidal, hydro and biomass. It also argues for adopting international standards that provide a benchmark against which progress of such projects can be measured and monitored.

The third cluster argues for having favorable business practices that raise the comfort level of owners of capital to generate a win–win for both parties. That means having a fiscal regime with clear incentives and disincentives towards climate action. It also means transparency in all business dealings.

The integration of SIEs into the global financial landscape is long overdue.

Private capital can play a critical role by participating in arrangements that seek to protect and enhance SIEs to tackle climate change.

Finance, however, always follows incentives. These have not previously been apparent in SIEs in the absence of the actions outlined in this section.

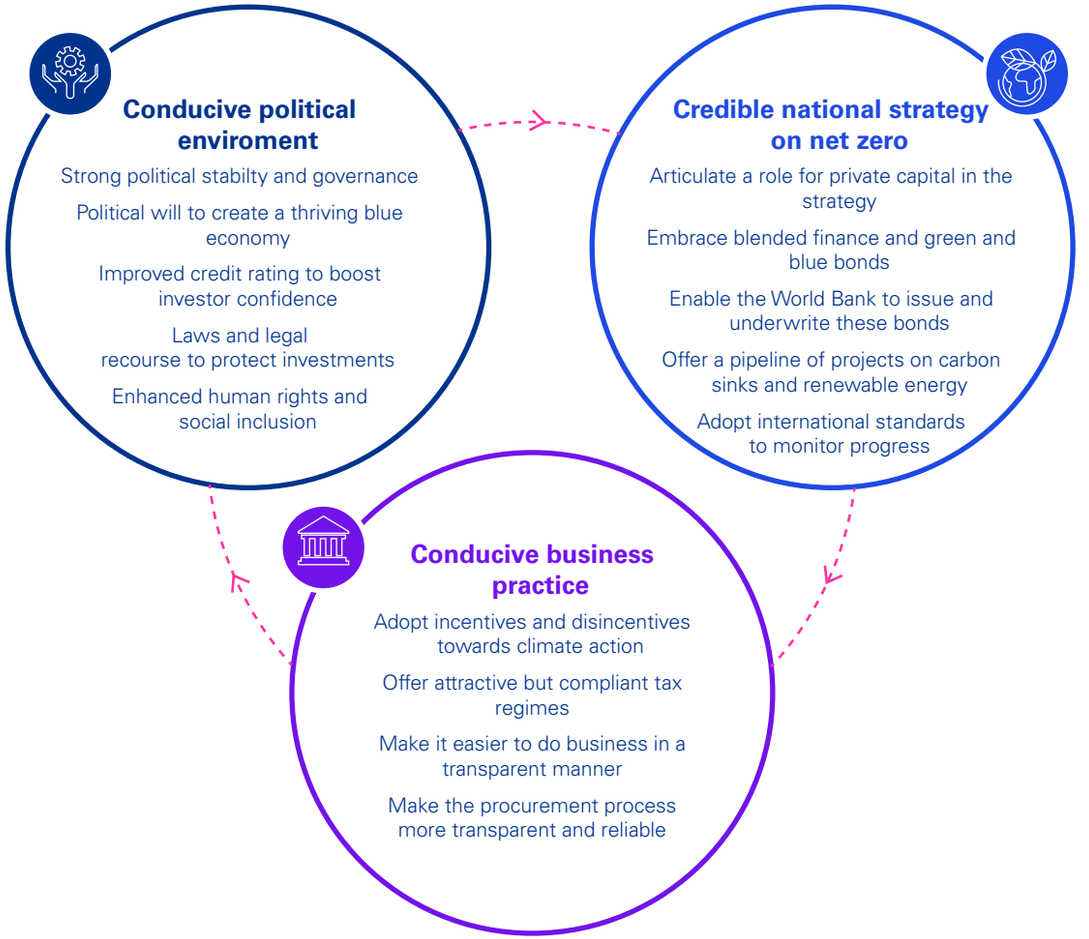
It is time to reimagine our world through the lens of the existential threats to the millions of people by prudently harnessing SIEs' renewable resources while also attaining the net zero goal.

This means tackling existing barriers by revisiting current policy and institutional architecture to ensure a win–win for capital market players and citizens of SIEs.

> **"The solution is to involve a multilateral body that can take risk off the table to kickstart the first generation of projects."**

An interview quote

Figure 9: What should individual SIEs aspire to do to enhance their appeal as attractive destinations for global capital market players?



Source: KPMG/CREATE-Research Survey 2022

03

Small island economy profiles

The Bahamas

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[6]:

390,000

Gross domestic product per person[6]:

USD32,400

Government plans to set up a market for carbon credits and increase the use of solar power, although this may be limited by space and budget constraints. The country already has a solid record of protecting marine and near-shore areas.

In 2016, The Bahamas committed to reducing its greenhouse gas emissions by 30 percent by 2030 under its nationally determined contributions (NDCs) submitted to the UN. It confirmed this target at 2021's COP26 event, after which Prime Minister Philip Davis criticized other countries' commitments for having "no teeth" and being "aspirational," with low-lying land at serious risk from rising sea levels.[7] The country has made substantial progress in reducing its emissions, falling by 22 percent between 2008 and 2018. The government has started updating its NDCs, and Davis has appointed a special advisor on climate change and the environment. In April 2022, it published a bill to establish a market in carbon credits (see box). However, it does not yet have a net zero target in law or policy.

According to Simon Townend, Partner, Head of Advisory and Tax, KPMG in The Bahamas, holistic plans and better data would speed progress.

"The first step is developing a sustainability strategy at the national level," he says, which the government is considering. Better information gathering would also help; "There are pockets of data, but it's not great. The NDCs exercise will collate more of that data, but there is no central climate-related database."

Under a 2013 policy, The Bahamas plans to generate 30 percent of its energy from renewable sources by 2030,[8] but in 2018, the country obtained just 1 percent from renewables, almost entirely from bioenergy.[9] The government is developing wider use of solar energy, including installations for buildings and islands that need to be rebuilt after hurricane damage. In March 2021, a USD9 million contract was signed to develop two microgrids on Grand Bahama and Abaco, funded by the EU and the Inter-American Development Bank.[10] State-owned power utility Bahamas Power & Light has set up a Family Islands solar energy program to

develop small grids on outlying islands, starting with Andros, Bimini, Eleuthera and Inagua.[11] However, in the past, the company has said that it would be impractical to build large-scale solar farms on New Providence, the island with more than two-thirds of the country's population, because they would require too much land.[12]

Although the Bahamas has a relatively high gross domestic product (GDP) per person, its government is constrained over what it can spend on reducing emissions, given the needs to reduce poverty and improve education and healthcare. The economy suffered from the impact of September 2019's Hurricane Dorian, which caused losses and damage of USD3.4 billion, a quarter of the country's GDP.[13] This was followed by the COVID-19 pandemic, which badly hit tourism, the country's most important industry.

However, Townend sees tourism as a strength for The Bahamas in its decarbonization efforts. "People come to The Bahamas because of its beautiful natural environment," he says. "We focus more on our environment because we know how important it is to our economy." Tourism also helps reinforce the country's existing links with countries, including the United States, Canada and the United Kingdom.

Townend adds that The Bahamas' reputation as a peaceful democracy whose political leaders have supported environmental protection over many years gives it the ability to act as "a global ambassador". The government is developing this through education and awareness projects for young people, including the One Young World Bahamas Caucus event in February 2022, which brought together 100 young leaders digitally and in-person to discuss climate action and oceans,[14] and a regional youth climate change conference in July 2022.[15]

The country's focus on tackling climate change through maritime projects was boosted in 2021, when Coral Vita, a local project that grows coral on land to replant in oceans, won one of the five first Earthshot prizes for ambitious environmental work established by HRH Prince of Wales of the British royal family. The project grows coral up to 50 times faster than traditional methods, allowing coral reefs, many of which are being damaged by warming oceans and acidification, to be replenished.[16]

In April 2022, the government published a climate change bill that aims to set up a carbon credits market in the country by appointing a management company that will validate carbon asset projects, record and track their progress and manages financial products related to carbon assets. The bill will also establish a national emissions registry and ban the trading of carbon offsets that a qualified auditor has not validated.[17]

One area with solid potential for carbon credits is the protection of marine and shoreline environments. Local financial services firm Wincrest Capital estimated the country could raise USD375 million annually through carbon credits by restoring and maintaining mangroves and sea grass fields.[18] But at present, there are limited resources for such areas, with the country's 32 national parks and 15 marine protected areas managed by The Bahamas National Trust. This statutory non-government organization relies heavily on donations and visitor fees from a few of its parks.[19]

Barbados

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[6]:

289,000

Gross domestic product per person[6]:

USD16,900

Strong government backing for a shift to entirely renewable energy by 2030 includes using solar panels to subsidize low-cost housing, developing large-scale solar and wind generation, and tax breaks for electric vehicles.

In 2019, Barbados published a national energy policy designed to move the country to use entirely renewable energy by 2030 with no domestic consumption of fossil fuels, despite the majority of its electricity being produced with these when it was published.[20] The country plans to continue extracting oil and gas for export, with Prime Minister Mia Mottley saying in March 2022 that fossil fuels will be needed to finance the country's energy shift and provide foreign currency and jobs.[21] It is one of just two economies in this research to target 2030 for net zero emissions, with the other being the Maldives. However, Barbados currently has relatively high greenhouse gas emission intensities by gross domestic product and protects one of the lowest proportions of key biodiversity areas in the group surveyed.

"There is strong government support to move towards 100 percent renewable energy and carbon neutral by 2030. Once you have the government on board, that is the foundation for everything else," says Christopher Brome, Partner, Deal Advisory Services, KPMG in Barbados. "In terms of scale, it is likely to be a bit easier to move 300,000 people along rather than millions. There has been general acceptance of the move towards the idea of a new national energy culture."

He adds that this is easier given the pride in the country's developing renewable energy technology history. In 1974, James Husbands established Solar Dynamics, whose solar hot water heating systems were the first to guarantee temperatures. The systems are made in Barbados and Saint Lucia and sold across the Caribbean and beyond.[22]

The country's sole domestic electricity supplier, Barbados Light & Power Company, has built a 10MW solar farm at Trents in the north of the island and buys power from customer-owned panels with a total capacity of 25MW, with the government adding to this through low-cost housing subsidized by solar panels (see box).[23] The company is also building a wind farm at Lamberts, also in northern Barbados. In her March 2022 Budget Address, the Prime Minister said the government would work with Barbados Light & Power Company to develop 30MW of generation at the site. She added that the government has feasibility reports for two offshore wind power projects.

Barbados Light & Power has also constructed a Clean Energy Bridge diesel generation plant, which will provide about a quarter of the country's energy requirements more efficiently than existing plants when it goes live later in 2022.[24] As the name suggests, the project aims to act as a bridge to, then a back-up for, the much wider use of renewable energy.

The Barbados Transport Board runs 49 electric buses as part of its overall fleet, with the most recent batch of 14 added in August 2021.[25] In her Budget Address, Mottley announced cuts in import duty for several types of electric vehicles, with the rate for used battery-powered vehicles falling from 45 percent to 10 percent, as well as a 24-month suspension of value-added and excise duties for electrical vehicles from April 2022.[26]

The Prime Minister has strongly criticized other countries on climate change. In November 2021, she told the COP26 conference in the UK that other nations needed to "try harder," particularly through developed countries providing billions of dollars more to finance adaptation and mitigation in developing ones. She added that a two-degree increase in temperature would be "a death sentence" for people in countries including Maldives, Fiji and Barbados.[27]

Christopher Brome says that it will be necessary to actively monitor the progression concerning the original targets set and for the government to revisit its 2019 policy framework, given the disruption caused by the COVID-19 pandemic, global price rises and supply-chain problems. "In terms of meeting the 2030 target, the government would need to review this to see if it needs to be tweaked or amended," he says. "We are a small island developing state with a high reliance on international imports, so we are susceptible to changes in the prices of technology and products such as solar panels."

Barbados is working on using renewable energy generation to help increase home ownership. The government has set up a low-cost housing developer, Home Ownership Providing Energy, which provides land at no cost, so buyers pay only for construction. In return, the company installs solar panels on the rooves of the houses and collects earnings from these for 20 years, after which they are given to owners. The scheme is open to residents who are employed but earn less than BBD4,000 (USD2,000) a month net of taxes and do not currently own a home.[28]

By April 2022, nearly 3,000 people had applied to the company for homes, with 30 approved. It is building 152 houses at Lancaster, near the island's west coast, and has other sites at earlier stages of development. It hopes to build 1,000 homes each year for the next five years.[29]

Bermuda

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[30]:

64,000

Gross domestic product per person[30]:

USD106,700

Regulation has set the course for developing solar, wind and biomass power, while the government is leading by example in moving to electric vehicles. Mitigating the risks of climate change holds opportunities for an insurance industry with experience in climate related catastrophe risk.

While Bermuda has not set a target date for net zero emissions, in June 2019, the Regulatory Authority of Bermuda published an Integrated Resource Plan, which included a recommendation that renewable energy contributes at least 75 percent of the British overseas territory's electricity by 2035.[31] At present, most electricity is generated from imported fossil fuels, along with small-scale use of solar power. The plan rejected a shift to natural gas. Instead, it recommended the deployment of 21MW of utility-scale solar power generation, up to 30MW of distributed solar and a 60MW offshore wind farm by 2025, as well as biomass generation by 2028.[32]

James Berry, Chief Executive Officer, KPMG in Bermuda, says that plan was based on robust consultation, including the country's electricity utility company. "People saw it as definitely moving in the right direction," he says. "Small island jurisdictions often struggle to put the time, effort and resources into comprehensive plans, hence having a plan placed Bermuda ahead of the curve regionally." However, he adds that progress has been slower than anticipated, given the need to deal with COVID-19.

The island already has among the lowest emission intensities by gross domestic product of the economies in this research — although its emissions per person are relatively high at 11.04 tCO_2e — and overall cut emissions by 10 percent between 2008 and 2018. It also has the highest rating for key biodiversity areas, with all of these either fully or partially protected, although it does not have a national sustainability policy.

The government has begun to electrify road vehicles, including buses and rental cars (see box) and is seeking

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to electrify all vehicles by 2035. With Bermuda's land area totaling just 21 square miles, it is easy for electric vehicles to stay within their charging ranges.

Climate risk finance is seen as an opportunity for Bermuda, particularly with its insurance industry, which has significant experience in climate related catastrophe risk. Many specialty reinsurers were set up after Hurricane Andrew in August 1992, which caused damage that led to billions of dollars of claims, contributing to the collapse of several US insurers, highlighting the need for reinsurance for extreme weather events.[33]

Berry says that the Bermuda reinsurance market has a history of innovation and is a natural home for the development of climate risk products both to cover the direct impacts of climate change and transition risks that arise from changes in regulations, investment levels and business practices. From a regulatory perspective, the Bermuda Monetary Authority operates a regulatory sandbox and an innovation hub to support insurers using new technology.[34] Climate risk finance has also become a key area for the Business Development Agency, which hosted events on this at November 2021's COP26 conference in the UK and in the US for financiers, as well as its first climate summit in May 2022 which focused on Bermuda's role in building resilience in the global economy in the face of climate change.[35]

Berry says that holistic government plans to tackle climate change would complement the insurance industry in continuing to choose Bermuda as a place for innovation. "There is a real opportunity to go to market as a jurisdiction that prioritizes efforts to mitigate the effects of climate change both in the global economy and our island community," he says.

Bermuda used to ban visitors from renting cars, restricting them to bicycles or scooters, given its limited road space. In April 2017, the government changed the rules to allow licensed providers to hire electric 'minicars' for visitors.[36] All of those offered are two-seater electric vehicles, including Renault Twizys and Hummer HXTs.[37]

Bermuda is also replacing old diesel-powered buses with electric vehicles. In April 2022, it introduced the first of 30 electric buses, which will make up a third of its fleet, with advice and support from Rocky Mountain Institute, a US non-profit organization. As well as reducing emissions, the Institute estimates the change will save USD10 million over the buses' lifetime. The government plans to move to all-electric buses by 2030.[38]

Cayman Islands

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[39]:

70,000

Gross domestic product per person[39]:

USD73,400

The government has created a ministry focused on sustainability and climate resiliency and planned a shift from diesel to solar power. At the same time, the solid financial services sector could be used as a tool to help tackle climate change globally.

The Cayman Islands Government, elected in 2021, has formed a new Ministry of Sustainability and Climate Resiliency with the Premier as the responsible minister.[40] It is yet to set a net zero target, but a previously-established energy policy aims to reduce greenhouse case emissions from 12.3tCO_2e per person in 2014 to 4.8tCO_2e by 2030. The policy also planned to expand the use of renewable energy from 3 percent when the policy was set in 2017, to 70 percent by 2037, with solar farms intended to be the main contributor.[41]

Currently, the country mostly relies on diesel for its electricity and is also vulnerable to supply chain disruption, as almost all goods need to be imported. Arnaud van Dijk, Director, KPMG in the Cayman Islands, says that there is a need to understand the country's current preparedness for a range of climate change scenarios and then improve resiliency based on these, something the government is well-placed to do given it is financially strong with very low levels of debt. It is also one of the lowest four jurisdictions in this research on credit risk, with an Aa3 rating from Moody's.[42]

Anthony Cowell, Senior Advisor, KPMG Islands Group, adds that it would make sense for the government to develop a holistic sustainability strategy, covering all economic sectors and individuals and including an independent analysis of impacts. This could include focusing on blue economy opportunities, such as maintaining and restoring mangrove forests as carbon sinks. A 2022 assessment of Cayman's 'natural capital accounts' valued existing mangroves at more than USD1 billion as part of total natural assets worth over USD3 billion.[43]

The Cayman Islands has one of the lowest emissions intensities based on its gross domestic product of the jurisdictions in this research, with the economy dominated by the financial services sector, which generated 44 percent of GDP in 2017.[44] The government is looking to develop the industry as a tool to tackle climate change, including through management of finance for environmental projects internationally and green and blue economy investment funds, taking advantage of the country's particular strength in this area.

"We have every major player in the financial services value chain here in the Cayman Islands." says Cowell. "We have the right people to facilitate new emerging and innovative products that can help solve the world's greatest problems, as well as the financial infrastructure and organizations to make that happen." This potential could be enhanced if the country adopts sustainable reporting standards, he adds, such as aligning itself with the European Securities and Markets Authority in working on a legal definition of 'greenwashing' that exaggerates environmental credentials[45] and building a new framework to encourage environmentally-beneficial financial services to the country.

Tourism is a beneficiary of the country's natural assets, but some of these are threatened by climate change. These include Grand Cayman's Seven Mile Beach, a part showing signs of erosion caused partly by severe storms.[46] Cowell says this is a local example of the impact of climate change, which is increasing the frequency of such extreme weather, and shows why the country needs to act: "There is a real need and urgency for us to be part of the solution," he says.

The Cayman Islands is one of the world's largest financial centers, with more than 27,000 active mutual and private funds registered in the jurisdiction as of December 31, 2021.[47] All registered funds are subject by law to annual audit and reporting requirements, enforced by the Cayman Islands Monetary Authority as the country's financial services regulator. In December 2021, the Cayman Islands Government announced it was working on a legislative framework for the implementation of environmental, social and governance (ESG) criteria for the islands' financial services industry, which would include all registered funds.[48] Policy consultation is due to begin in 2022.

Given the size of the industry, the Government's Ministry of Financial Services indicated that the Cayman Islands is uniquely positioned to contribute to global efforts to better incorporate and understand ESG considerations. This has been echoed by the Cayman Islands Institute of Professional Accountants, which has formed an ESG Committee and, in July 2022, shared comments on the International Sustainability Standards Board's exposure drafts addressing general requirements for disclosure of sustainability-related financial information as well as climate-related disclosures.[49]

Crown Dependencies

Jersey has set an ambitious 2030 carbon-neutral target following an extensive public consultation. Guernsey has pioneered sustainable finance, including a Green Fund designation, and the Isle of Man plans to produce three-quarters of electricity from renewables by 2035.

The three Crown Dependencies of Jersey, Guernsey and the Isle of Man are separate, self-governing island groups under the British Crown. The UK government is responsible for their defense, but the three each set their policies on energy, the environment and taxation.

However, at the COP26 conference in Glasgow in November 2021, the UK government agreed to extend its ratification of the Paris Agreement to cover the three Crown Dependencies. This means they will share the UK's 2030 target to reduce emissions by at least 68 percent compared with 1990 levels and reach net zero by 2050.[50] All three are assessed as having an enabling environment for climate finance. They have three of the four highest credit ratings in this research and the three lowest emissions intensities of imports.

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Jersey

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[51]:

103,000

Gross domestic product per person[51]:

USD57,000

Jersey imports its electricity from France, which is almost entirely produced from nuclear and renewable sources, with only emergency backup generation on the island. As a result, its decarbonization efforts are focused on transport and heating, the primary sources of greenhouse gas emissions. It has a formal net zero target date of 2050, but in May 2019, its States Assembly voted that the island should develop plans to be carbon neutral by 2030.

The government published a Carbon Neutral Roadmap in November 2021, involving several public consultation stages (see box).[52] The assembly approved the roadmap on 25 April 2022, and the UK formally approved the extension of its Paris Agreement ratification to Jersey on 3 May 2022.[53]

On transport, Jersey's largest source of emissions, the roadmap includes plans to promote electric vehicles by subsidizing their cost, increasing charging infrastructure, banning the import and registration of petrol and diesel vehicles from 2030 and providing incentives to scrap old vehicles. It takes a similar approach to heating, with subsidies for new heating systems and insulation, a ban on installing new oil, gas and coal boilers from 2026, and the introduction of energy performance certificates. It currently has one of the highest greenhouse gas emission intensities by gross domestic product in this research.

Simon Nicholas, Head of Environmental, Social and Governance, KPMG in the Crown Dependencies, says that Jersey's plans are fairly detailed, but do not have transparent costs. "We know what needs to be done, whether that's electric vehicle charge points or ensuring sufficient capacity on the import of electricity. It's just funding it," he says. The plans also disregard emissions generated by airplanes and boats traveling to and from Jersey. Although the island's government does not control these, Nicholas thinks it could encourage operators to introduce sustainable fuels.

Jersey's financial services industry is working to develop its reputation for sustainable finance. A March 2021 report commissioned by trade promotion body Jersey Finance said it would benefit from a strong government target for carbon neutrality, effective communication of its work in this area and capacity for ESG work within the island's regulatory and legal structures. It set a target that by 2030 Jersey will be

recognized as "the leading sustainable international financial center in the markets it serves."[54]

In November 2021, Jersey joined Financial Centres for Sustainability, a network that seeks to support the UN's Sustainable Development Goals and the Paris Agreement on climate change, and the Jersey Financial Services Commission joined the Network of Central Banks and Supervisors for Greening the Financial System.[55]

Nicholas says that the finance industry's support and commitment in this area strengthen Jersey in moving towards net zero. "It is heavily influential on government policy. It is the biggest industry on the island, and it is squarely behind the agenda," he says.

Jersey undertook extensive public and political consultation in developing its Carbon Neutral Roadmap. The process included a 'citizens' assembly,' a panel of 45 randomly-chosen citizens assisted by experts who held 15 virtual meetings between March and May 2021 to consider the question 'How should we work together to become carbon neutral?'. They endorsed 2030 as the carbon neutrality date and made specific recommendations that were more ambitious than the government's, including that public transport should be decarbonized and no new fossil fuel vehicles should be registered by 2025.[56] In a report published in February 2022, the State Assembly's Public Accounts Committee found that the assembly cost nearly GBP191,000 (USD216,000) to run compared with an initial estimate of GBP86,000.[57]

Guernsey

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[58]:

64,000

Gross domestic product per person[58]:

USD66,700

In August 2020, Guernsey's States Assembly legislated for the Climate Change Policy and Action Plan to move the jurisdiction to net zero emissions by 2050, with an interim reduction target of 57 percent on 1990 levels by 2030. The 2050 date had already been proposed in a 30-year energy plan, with the action plan adding a 2035 ban on imports of petrol and diesel vehicles, the same date as the UK.[59] Between 2008 and 2018, Guernsey cut its total emissions by 21 percent, one of the most considerable reductions among economies in this research. However, it protects relatively few of its vital biodiversity areas.

Guernsey gets 94 percent of its electricity from France via an undersea cable from Jersey, and all is generated from renewable sources. Utility company Guernsey Electricity has an oil-burning power station that can generate all the island's electricity if needed.[60] The power station was used for more than a year in 2018–19, following the failure of the undersea cable, and despite its successful replacement, Guernsey aims to install a direct link to France over the next few years.[61] Guernsey Electricity has worked to develop community solar generation, and in March 2022, it opened a consultation with the public on how tariffs would be changed to fund the shift to net zero by further increasing on-island renewable generation, so that the power station is used for emergency generation only.[62]

Financial services are the largest sector of Guernsey's economy, providing one-fifth of jobs and two-fifths of gross domestic product. In 2018, the government published a policy framework that proposed to develop green and sustainable finance and define the island as a specialist in this area.[63] Several initiatives followed, including the launch of the Guernsey Green Fund designation (see box), the jurisdiction becoming one of the founder members of Financial Centres for Sustainability and the financial services commission joining the Network for Greening the Financial System.[64] In 2020, the government published principles for green private equity, the island's investment fund association has established educational events on sustainable finance for both industry and students, and We Are Guernsey, the joint industry and government promotional body, held its third sustainable finance week in September 2022.[65]

"It's worth recognizing that Guernsey was speedy to see the potential of green finance," says Simon Nicholas, Head of Environmental, Social and Governance, KPMG in the Crown Dependencies. "It is quite mature in some of its thinking in a quite immature market."

In July 2018, the Guernsey Financial Services Commission launched the Guernsey Green Fund designation, the world's first regulated product of this kind.[66] Its rules, updated in 2021, require funds to spread risk and seek returns for investors while mitigating environmental damage, with at least 75 percent of assets having to meet specified green criteria.[67] ADM Capital's Cibus Fund, a private equity vehicle that invests in sustainable agribusiness, was the first such fund in October 2018. As of April 2022, the commission had awarded the designation to 13 funds.[68] Several are concerned with renewable energy, including funds run by Bluefield Partners, NextEnergy and Resonance Asset Management, while others invest in farming projects and forestry sequestration.[69]

Isle of Man

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — Most prepared

Population[70]:

84,000

Gross domestic product per person[70]:

USD89,900

Under its Climate Change Act 2021, the Isle of Man legally committed itself to net zero emissions by 2050, set interim targets, and published a climate change plan. It will report on its progress on this plan annually and emissions every five years.[71] In February 2022, the government allocated GBP42 million (USD47.5 million) of new funding to climate change work[72], and in March, it set a 2035 target to reduce all greenhouse gases by 45 percent by 2035, backed by a public consultation where just over half the respondents supported at least this level of reduction by the earlier date of 2030. It will publish its Climate Change Plan for 2022–27 for approval by the island's parliament, the Tynwald.[73] However, at present, it has one of the research's highest greenhouse gas emission intensities by gross domestic product.

Simon Nicholas, Head of Environmental, Social and Governance, KPMG in the Crown Dependencies, says that the country has clear ambitions, but like other islands, the overarching strategy is less clear. Equally, the ability of the island to finance the full decarbonization transition is not publicly understood. In order to be successful, it is key that the island's governments break down silos and each department understands their role and responsibilities on the journey. "There's pockets of activity throughout government and it's great that there is a sense of urgency," he says of climate change work. "In order to succeed, it is important that all areas follow a unified vision and collaborate across departments. Climate change crosses many departments from planning to utilities to education to business engagement."

Under its Future Energy Scenarios strategy, the island has already set a target to generate three-quarters of electricity, which produces a third of emissions from renewable sources by 2035.[74] Most electricity is generated on the island from natural gas imported through a spur in a pipeline linking Scotland and Ireland. Hydroelectric and energy from waste plants provide some on-island renewable capacity, and an interconnector to Great Britain provides around 9 percent of electricity.[75] To be conservative, the Isle of Man currently treats British electricity as non-renewable in its data, despite around a third of such generation coming from renewable sources. The government is considering how to encourage homeowners to install better insulation, which would reduce the amounts of electricity, oil and gas used for residential heating.

Nicholas says there is strong potential for the Isle of Man to use wind power. Most of its land is used for agriculture, meaning there is space for onshore wind and solar. More significantly, in 1991, the government took ownership from the UK of its territorial seas, which extend up to 12 miles (19 kilometers) from the shore. Still, it has not yet begun to take advantage of investor appetite for offshore wind licenses. In February 2021, a joint venture of energy groups BP and Energie Baden-Wuerttemberg agreed to pay the UK's Crown Estate GBP924 million (USD1.04 billion) for the option to develop 3GW of offshore wind capacity on 800 square kilometers of the Irish Sea next to the Isle of Man's waters, indicating their potential.[76]

Developing access to renewable energy will be important in retaining and attracting the many international financial and digital businesses that have established offices and data centers on the island because of its tax neutrality, political stability and location near major markets. Many such businesses have set net zero target dates of 2030, meaning they will need to show they are using decarbonized electricity by then. Nicholas says the Isle of Man could work with the UK and Ireland to develop this.

Isle of Man institutions are working to engage with businesses and citizens on climate change. The Isle of Man Financial Services Authority recognizes "a significant current risk" from climate change and is developing a strategy and planning further work with stakeholders on this.[77] Its not-for-profit Energy and Sustainability Centre provides research, training and advice to companies, organizations and individuals, with links to the Technical University of Denmark.[78] The government is developing a Strategic Economic Framework, Our Big Picture, with the support of KPMG in the Crown Dependencies to develop policy options to achieve "a secure, vibrant and sustainable future for our island nation," which is due later in 2022.[79]

In 2016, UNESCO accepted the Isle of Man as a member of its network of more than 700 biosphere reserves globally, making it the only one that covered an entire country.[80] To do so, the government zoned the island's land and territorial sea into core areas such as legally-protected nature and marine nature reserves; care areas including open land, agricultural and all marine areas within three miles of its shores outside reserves; and sustainable development areas for homes, businesses and infrastructure, as well as other territorial waters. In its most-recent biosphere strategy, the government said it would continue to provide a dedicated officer and budget for the work, engage young people through schools and colleges, and from 2022 will, publish an annual report on its performance.

Nicholas says that this experience means the country focuses on environmental management, which should help introduce measures to achieve net zero.

Fiji

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[6]:

905,000

Gross domestic product per person[6]:

USD5,100

The country has followed its COP23 presidency with a legally-binding net zero carbon target, a plan to obtain all electricity from renewables by 2035, and new protections for its oceans, with pioneering green and blue bonds to help finance this.

Fiji is a leading advocate for action to tackle climate change. In June 2021, it became the seventh country in the world and the first small island developing state to adopt a legally- binding net zero commitment for carbon emissions by 2050.[81] However, its total emissions rose by 48 percent between 2008 and 2018.

The country held the presidency of the 23rd annual Conference of the Parties of the UN Framework Convention on Climate Change (COP23) in 2017–18, which led to the Talanoa Dialogue, designed to allow governments, organizations and individuals to share stories and ideas; regional initiatives including the Climate Action Pacific Partnership; and a sovereign green bond to support work to mitigate and adapt to climate change (see box).[82] The issue of a sovereign green bond means Fiji is one of the 14 SIEs in this research credited with having an enabling environment for climate finance, with most of the others being more developed economies.

In 2018, Fiji launched its National Climate Change Policy, which, as well as a 2050 net zero target, included plans to move all national electricity production to renewable sources by 2035 and decarbonize the country's transport sector.[83] Approximately three-fifths of electricity is produced from diesel at present, with the plans including a review of existing hydropower production to maximize output under changing climate conditions and the development of new solar generation. Some communities lack grid connections, so organizations such as the World Bank have supported companies, community organizations and individuals to encourage local banks to issue loans for standalone renewable equipment.[84]

"The government has put a lot of effort into articulating these commitment on the global stage," says Marissa Apted, Director, Advisory, KPMG in Fiji. But she adds that the country needs international support, such

as from multilateral banks, to achieve this: "Two of the key areas are technical assistance and financial assistance, including technical assistance to identify bankable projects," she says.

The country benefits from having local organizations accredited to manage and distribute international funding, notably the Fiji Development Bank. It has good relationships with the World Bank and other international agencies, many of which have chosen Fiji as a base to cover the Pacific Islands. But Apted adds that despite the government's commitment, changes in behavior by individuals and organizations are also required.

Fiji joined 13 other countries in 2020 in committing to managing the oceans within its exclusive economic zone (EEZ) sustainably.[85] In December 2021, it partnered with the US-based Waitt Institute to protect 30 percent of its EEZ by 2030, with work covering marine spatial planning, blue economy and sustainable fisheries.[86] The last will include more enforcement work on compliance with international conventions, with overfishing by foreign operators a significant problem for Fiji, with some dumping fuel and even boats in the country's waters, and depleting fish stocks.

Rising sea levels mean the country must protect coastlines and consider relocating some coastal communities. It is also set to host climate change refugees from elsewhere in the Pacific, with Kiribati having purchased an estate on the Fijian island of Vanua Levu in 2014 as a home if rising seas inundate Kiribati.[87]

During its COP23 presidency in October 2017, Fiji launched one of the world's first sovereign green bonds, raising FJD100 million (around USD50 million). The bond, listed on the London Stock Exchange and maturing in November 2030, has primarily been used to finance adaptation projects that build resilience against climate change and develop renewable energy.[88] The first tranche of FJD40 million was oversubscribed by more than double that amount, showing investor appetite for such bonds.[89]

At the COP26 event in November 2021, Fiji announced it would issue sovereign blue bonds in 2022, working with the United Kingdom government, the UN Development Program and the UN Capital Development Fund. Raising a similar amount as the green bond, the proceeds of the blue bonds will help pay for the country's work to protect its marine area and fisheries, as well as protect communities from rising sea levels.[90]

Jamaica

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[6]:

2,740,000

Gross domestic product per person[6]:

USD5,500

The country is working to introduce electric vehicles and is expanding its use of solar and wind power. A net zero target could be an accelerator to meet its 2030 healthy natural environment target.

Jamaica cut its greenhouse gas emissions by 11 percent between 2008 and 2018, and its government has established several initiatives that should reduce them further, including tax breaks and funding to promote the use of electric vehicles (see box), and efforts to diversify the fuel sources for country's electricity supply. Between 2008 and 2018, heavy fuel oil's share of electricity generation fell from 95 percent to 74 percent, with natural gas and wind power providing 11 percent and 10 percent, respectively. Customers of Jamaica Public Service (JPS) can sell some of the excess renewable energy they produce to the power utility.[91] Some hotels, such as the Grand Palladium, have introduced a solar generation to reduce electricity purchased from the primary grid.[92]

Large-scale production has also expanded, with Wigton Windfarm being the largest wind farm in the English-speaking Caribbean, having commissioned its turbines between 2006 and 2016.[93] The government plans continued expansion of renewables, with an expectation that they will generate about 22 percent of electricity by 2025 and a half by 2037.[94]

However, at present, Jamaica does not have a net zero target. "There are a lot of bottom-up activities happening, but a top-down plan and vision are absent," says Raymond Campbell, Partner, Head of Advisory, KPMG in Caricom. The government's national development plan, Vision 2030, includes "a healthy natural environment" as one of its four national goals, with hazard risk reduction and adaptation to climate change as a resulting outcome.[95] Campbell says that Vision 2030 could be revised to include specific targets on emissions: "If you achieve net zero, you increase your chances of having a healthy natural environment," he says, even though

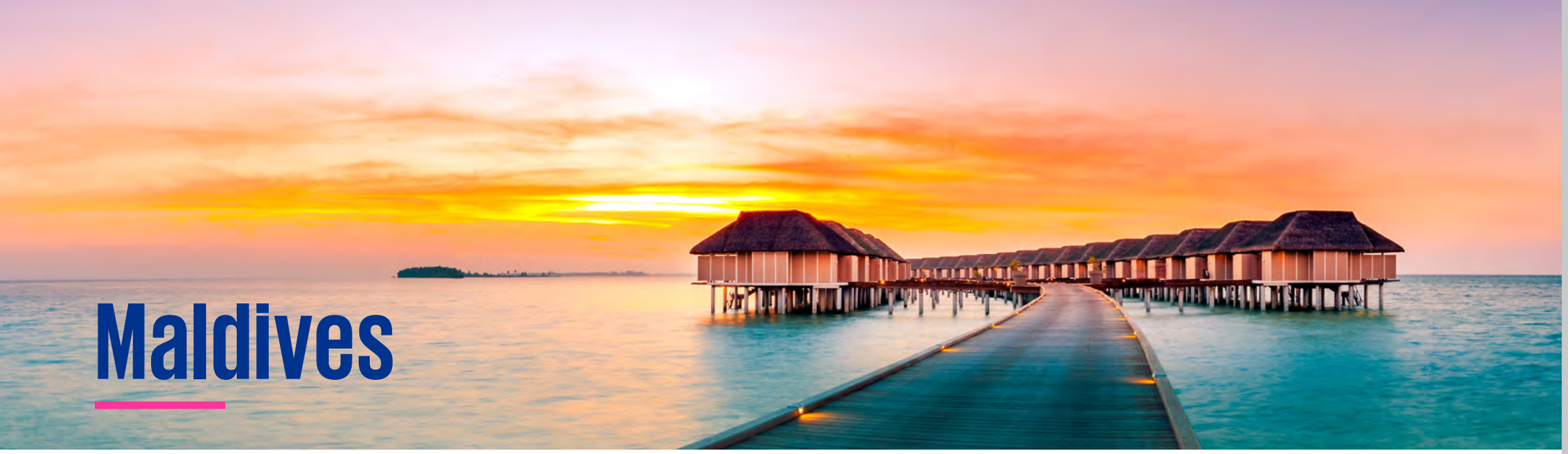
it is not essential to meeting this goal. "I see net zero as being an accelerator of the healthy natural environment targets."

Campbell says that there are challenges for the country in strengthening its climate change plans. The relatively low levels of personal disposable income constrain individual and household capacity to change behaviors and consumption patterns and the ability to invest. The government is fiscally constrained, with limited available funding for new initiatives. It also needs to improve the quality of governance — something it recognizes in the Vision 2030 goals — to monitor and implement transformative projects. International organizations, including the Inter-American Development Bank and the World Bank, have funding available for climate change transition work in the Caribbean. Still, such projects require significant governmental resources both for applications then management.

There is room for optimism however, including increased use of eco-friendly mass transit systems, such as an electric bus service. However, railways are used mainly to transport minerals rather than passengers or general freight. Campbell adds that Jamaica has the potential to continue to develop renewable energy and broader environmentally sustainable investment in the 'blue economy.' "There are economic opportunities for the country in a net zero world which are not necessarily available in current economic structures, as the oceans take on greater importance," he says. It also helps that as a relatively small country, Jamaica can move quickly: "It is possible to produce a fairly quick change in relatively short order."

Jamaica is working to encourage the use of electric vehicles by developing infrastructure, tax breaks and vehicle purchasing. "As a government, we are cognizant that electric vehicles are the future," Science, Energy and Technology Minister Daryl Vaz said in March 2021, announcing the setting up of 12 charging locations at existing fuel stations with power utility JPS.[96] In March 2022, as part of the annual budget, the government cut import duty on electric vehicles from 30 percent to 10 percent for up to 1,000 vehicles a year and announced plans to power publicly-owned buses with electricity over the next decade.[97]

JPS and the Inter-American Development Bank have established a three-year e-mobility project to increase the development of electric vehicles in Jamaica. In October 2021, the project announced an e-mobility fund for entrepreneurs and is also working on public awareness and building technical capacity.[98]



Maldives

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — Most prepared

Population[6]:

384,000

Gross domestic product per person[6]:

USD13,200

The country has set a 2030 net zero target conditional on external support, but is unlikely to meet it, although the use of solar energy is rapidly increasing. The government is developing public transport while some tourist resorts focus on sustainability.

The Maldives has set 2030, one of the world's most ambitious targets, as its target date for reaching net zero emissions. Only one other economy in this research, Barbados, has set such an early date with most targeting 2050. President Ibrahim Mohamed Solih announced this at a December 2020 UN climate summit, saying that the country was initially aiming to reduce its emissions by a quarter by 2030 but believed it had "a responsibility to take a more transformational economic and environmental path." He added that the target was conditional on external support: "To reach this goal, we will need the realization of the financial and technical assistance that has been pledged to countries such as ours over many decades."[99] Solih repeated the 2030 date at the COP26 event in the UK in December 2021, asking why other countries are not as ambitious and saying that citizens of Maldives are threatened with becoming climate refugees.[100]

"The Maldives is a very climate-vulnerable country, one of the most in the world," says Mohamed Mihad, Partner, KPMG in the Maldives. It consists of 1,190 coral islands, 200 of which are inhabited, and has an average elevation of 2 meters. Mihad believes that the levels of investment required for the 2030 target mean that it is highly unlikely it will be met. "The government should finally reframe its thought processes around this to a more realistic timeline," he says. Total emissions grew by 104 percent between 2008 and 2018, the most considerable increase among the economies in this research.

Electricity generation is responsible for around three-fifths of the country's emissions, relying on diesel generators. It is piloting several types of renewable energy. Still, solar generation is its priority, with the government saying in September 2020 that each unit of solar power costs less than half the price of the

most efficient diesel generation. It was planning to triple its 2020 renewable generation capacity to 85MW by 2023, primarily through new solar capacity.[101]

Mihad says that solar generation is an appropriately flexible choice for the Maldives. Centralized power generation is impractical given its dispersed population, but with the country's reliably sunny weather and location spanning the equator, solar power can be scaled for each community. He adds that financing distributed solar generation will require support from multilateral agencies, as projects will be too small in scale for private investors otherwise. The World Bank is working to lessen the risk of such investments, allowing bids in US dollars and using escrow accounts.[102]

The government is taking measures to decarbonize transport, the second-biggest source of emissions. It is developing a public transport plan for the Greater Malé capital city region and an integrated national public ferry network. In April 2021, Maldives Transport and Contracting Company, which is developing this network and will run its services, contracted UAE-based Gulf Craft to build 17 ferries for the initial coverage zone.[103] In April 2022, the company signed a service agreement with the government for two further phases of work.[104] The government has removed duties on electric vehicles. However, Mihad says policymakers must be cautious about any measure that cuts revenues and seek compromises between areas that require investment, such as health and education.

The Maldives opened its first tourism resort in 1972, and the industry now generates more than a quarter of the country's income, with 1.7 million arrivals in 2019, before the pandemic's impact.[105] The country promotes its environmentally-focused tourism with several resorts involving themselves in protecting coral reefs and turtle populations.[106] Soneva, a Maldives-based resort operator with two locations in the country, runs several sustainability projects, including extensive use of solar power for its operations and provision of waste management systems for local islands.[107]

Malta

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[6]:

516,000

Gross domestic product per person[6]:

USD33,300

The carbon-neutral target is supported by constructing a gas-fired power station and plans for a pipeline to Sicily. At the same time, free buses and electric vehicle subsidies aim to reduce road pollution.

Malta plans to be carbon neutral by 2050, in line with the target for the European Union as a whole, which the country joined in 2004, putting it among just ten economies in this research with a net zero target in law or a declaration pledge or policy. As an EU country, it plans to end sales of new internal combustion engine vehicles by 2035, one of just five in the group. It cut national emissions by 34 percent between 2008 and 2018, second only to Curaçao. However, it does have one of the highest emissions intensities of imports of the economies in this research.

In September 2021, the Maltese government published a low carbon development strategy developed over three years as a detailed plan to decarbonize across all sectors.[108] While campaigning for March 2022's election, which resulted in his re-election, Prime Minister Robert Abela pledged that the country's second-largest island, Gozo, would be carbon neutral earlier than the main island of Malta, with all energy coming from renewable sources.[109]

The country has taken significant steps towards cleaner electricity generation over several decades. In the 1990s, it replaced coal with heavy fuel oil. Then in 2017, ElectroGas Malta opened a liquid natural gas (LNG) power station at Delimara.[110] In the same year, it permanently closed its two heavy fuel oil power stations.[111] Two-thirds of the country's electricity now comes from LNG-operated plants, with a further quarter supplied through a 98-kilometer electricity interconnector with Sicily, which opened in 2015, with more than two-thirds of this power also generated with natural gas.[111] In 2021, the government approved a second cable planned for completion in 2025.[113]

The LNG power station is currently served by a floating storage unit and a regasification facility. Still, there are

advanced plans for a pipeline to Sicily which could be converted to carry green hydrogen (see box). Also, in 2021, the government launched a new set of grant schemes to help households adopt solar energy for electricity and water heating, some replacing existing programs and air-to-water heat pumps for those without access to a roof.[114] "We are headed in the right direction on energy," says Rachel Decelis, Senior Manager, KPMG in Malta.

She adds that there is more to do on transport, with the country relying on cars, despite a high population density. In 2021, the government announced that buses will be free of charge for all residents from October 2022, extending an existing scheme for young, older and disabled people and students, although visitors will still have to pay.[115] It also offers subsidies for electric vehicles. "These are all good policies, but more needs to be done to bring the various existing policies, including those on air quality, transportation and infrastructure, together," says Decelis. Tackling road congestion and improving pavements could yield a range of benefits, such as reducing air pollution, childhood obesity, and cutting emissions.

The country has other challenges to overcome in reducing emissions, with limited space available for solar farms or woodland for carbon sequestration, and significant amounts of energy required to desalinate seawater, a process that in 2015 produced 58 percent of the country's drinkable water.[116] But Decelis says working on a small scale helps Malta innovate; for instance, the country is one of the first to use reverse osmosis for desalination. Its economy is service-based, with no large-scale industries to decarbonize, and emissions per person are already low, allowing it to focus on energy and transport.

Malta's economy has increased rapidly over the last few years, and this focus on economic growth tends to exacerbate environmental pressures, according to Steve Stivala, Associate Director for Infrastructure, Public Policy and Strategy, KPMG in Malta. However, he thinks that focus is now changing, with green issues taking a high profile in the March 2022 elections. "Incomes have increased, but there is less green space and problems with traffic and pollution. People have realized that GDP growth is important, but it doesn't equate to general wellbeing," he says.

The Melita Transgas Pipeline will run 159 kilometers from Gela in Sicily to the Delimara power station in Malta, linking the island to Europe's gas grid. Having completed design work in October 2021, Malta's Planning Authority approved the Maltese side of the pipeline, with public procurement for construction work to follow.[117]

The pipeline has been designed to transport LNG but could also carry hydrogen produced from electrolysis powered by renewable energy sources, contributing to Malta's carbon-neutral goal. "Hydrogen production is more expensive than natural gas, but in the future, it is expected that production costs will go down with better technology and larger scale," says Steve Stivala.

Singapore

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — **Most prepared**

Population[6]:

5,454,000

Gross domestic product per person[6]:

USD72,800

The government aims to meet the 'existential challenge' of climate change with a new net zero target and much higher carbon tax, adding to progress on electric vehicles and ambitious plans to develop solar and possibly nuclear power.

Singapore's government views climate change as "an existential challenge."[118] It is an industrialized city-state with relatively high emissions per person of 12.18tCO_2e, its total emissions rose by 38 percent between 2008 and 2018, and it has the highest emissions intensity of imports of any of the economies in this research. Its government is developing a strong policy response, including its 2030 Green Plan published in February 2021 (see box).

In February 2022's annual budget speech, Finance Minister Lawrence Wong advanced the country's net zero target date from "as soon as viable in the second half of the century" to "by or around mid-century" with revised plans later this year.[119] It is one of just ten economies in this research with a net zero target either in law or as a declaration, pledge or policy. To help achieve this, Wong announced that the existing carbon tax levied on a few dozen large emitters will increase from SGD5 per tonne of emissions to SGD25 in 2004, and between SGD50-80 (USD35–57) by 2030. The proceeds will be used for decarbonization work and to reduce impacts on businesses and households.[120]

Cherine Fok, Director, Sustainability Services, KPMG in Singapore, says that the government is demonstrating a commitment to stick to its plans, despite sharply rising fuel prices: "The minister has come out to say they are not going to reduce fuel taxes because that would be contrary to getting people to use more carbon-friendly kinds of transport."

The government is banning new diesel cars and taxis from 2025, one of just five economies in this research to have taken such a measure. It offers tax incentives to adopt electric vehicles and plans to phase out all internal combustion engine vehicles by 2040.

Singapore's Land Transport Authority has commissioned more than 600 charging points at over 200 public car parks that are due to be installed by early 2023, and has launched a tender to install 12,000 charging points in nearly 2,000 car parks run by the country's public housing provider by 2025.[121]

Singapore is a hub for international aviation and shipping. "It's economically efficient, but carbon inefficient, to be a hub," says Satya Ramamurthy, Head of Infrastructure, Government and Healthcare, KPMG in Singapore. "You can either consider that a problem or an opportunity." The country aims for the latter, working to maintain its position as the world's biggest maritime fuel hub by developing clean alternatives, such as liquefied hydrogen, liquid ammonia and synthetics.

The country is accelerating the use of local solar power generation under its Green Plan and could import electricity from Australia through a planned 4,200-kilometer undersea power cable. A report commissioned by the Energy Market Authority and published in March 2022, said that nuclear power could provide 10 percent of Singapore's energy by 2050, as the technology has improved since the government ruled out its use in 2012.[122] The government is also working to manage energy demand and imposed a temporary moratorium on new data centers, which use significant amounts of electricity, in 2019. In January 2022, it said it would selectively welcome new energy-efficient centers and work to improve the efficiency of more than 70 existing ones.[123]

The Singapore Green Plan 2030, published in February 2021, aims to provide a holistic blueprint for the country's sustainable development during the current decade. It includes work towards net zero but also covers commitments made under the UN's 2030 Sustainable Development Agenda. Net zero-focused targets include a five-fold increase in solar energy deployment to provide around 3 percent of electricity demand, reducing net carbon emissions from schools by two-thirds, and reducing energy consumption in existing public housing developments by 15 percent.

Other targets that may contribute to decarbonization include planting a million more trees, increasing the land area of nature parks by 50 percent and meeting 30 percent of the city-state's nutritional needs with locally-produced food.[124] "The Green Plan is focused, with so much detail and clarity that everybody in the government knows what needs to be done by when and how they will be held accountable for it," says Satya Ramamurthy.

Trinidad and Tobago

Assessment based on four pillar ratings

Contribution to decarbonization	Drivers of emissions	Policies and enabling environment	Energy supply and use
●	●	●	●

Least prepared — Most prepared

Population[6]:

1,407,000

Gross domestic product per person[6]:

USD15,200

A natural gas exporter, Trinidad and Tobago plans to shift to solar power, although interim targets and reviews would strengthen its 2030 plan. The government is reducing fuel and electricity subsidies, while incentivizing electric vehicles.

Unusual for a small island economy, Trinidad and Tobago is a net energy exporter and the largest natural gas producer in the Caribbean.[125] The state-owned National Gas Company of Trinidad and Tobago's Phoenix Park processing facility, which opened in 1991, is one of the largest in Latin America and the Caribbean.[126] As well as exports, the country uses natural gas to generate most of its electricity and produce ammonia and methanol. Energy makes up around a third of the country's gross domestic product.

In this research, Trinidad and Tobago has among the highest levels of both greenhouse gas emissions intensity by gross domestic product and emissions per person. The latter was 34.6tCO_2e per person in 2018, more than five times the global average, although overall emissions have dropped by 17 percent since 2008.

At present, a tiny proportion of electricity comes from renewable sources. However, the government is planning a transition to renewable energy. "As an economy largely based on oil and gas and petrochemicals, we in Trinidad and Tobago recognize our responsibility in transitioning, over reasonable and manageable time, to net zero," Prime Minister Keith Rowley told the COP26 conference in the UK in November 2021. "We have set very ambitious targets aimed at diversifying our economy." These include measures to support investment in green hydrogen production, an intention to explore carbon sequestration and a target to produce 30 percent of power from renewables by 2030.[127]

Rowley highlighted two solar projects at Brechin Castle and Orange Grove, which will provide 10 percent of the country's power. These are being built by a consortium led by Lightsource BP, a unit of the

UK-based energy group, which plans to have both sites operational in 2023.[128]

Dushyant Sookram, Country Managing Partner, KPMG in Trinidad and Tobago, says that the government could strengthen the credibility of its 2030 plan by adding interim targets and reviews that allow adjustments to timescales if required. "There should be some milestones along the way," he says. "When you measure things, they get done. If you attend a conference and talk about it, but after that, it gets pulled, then you are not going to get to where you need to get if you are serious about climate change."

The government has reduced subsidies for vehicle fuel and electricity and discussed their eventual removal, while introducing incentives for renewable technologies (see box). With international financial support, it has also undertaken work to establish a monitoring, reporting, and verification system to track greenhouse gas emissions; installed solar power for 12 communities; joined the Global Ocean Alliance that supports the establishment of marine protected areas that, among other benefits can support oceanic carbon absorption; and is working to develop the installation of fast electric vehicle chargers that use solar energy.[129]

Sookram says that while climate change is on the government's agenda, more could be done to encourage the public to support work in this area, including improved education on the topic in schools.

In 1974, in response to sharp increases in global oil prices, Trinidad and Tobago introduced fuel subsidies, leading to citizens enjoying some of the world's lowest prices for vehicle fuel. A levy on oil production fully funded this until 1992, but since then, the country has usually had to finance a shortfall as its oil production declined. The government has sought to reduce the subsidy over several years, arguing it has a considerable cost and disproportionately benefits the rich.[130] In March 2022, Prime Minister Rowley said the subsidy currently costs more than TTD767 million (USD113 million) and questioned whether it was the best way to spend public money, although he added that removing it entirely would cause a "huge shock to the economy".[131]

Meanwhile, the government is encouraging a shift to electric vehicles. In January 2022, it removed customs duties, motor vehicle tax and value-added tax from battery-powered vehicles built within the last two years.[132] This follows a range of incentives introduced over several years to install solar power in homes.

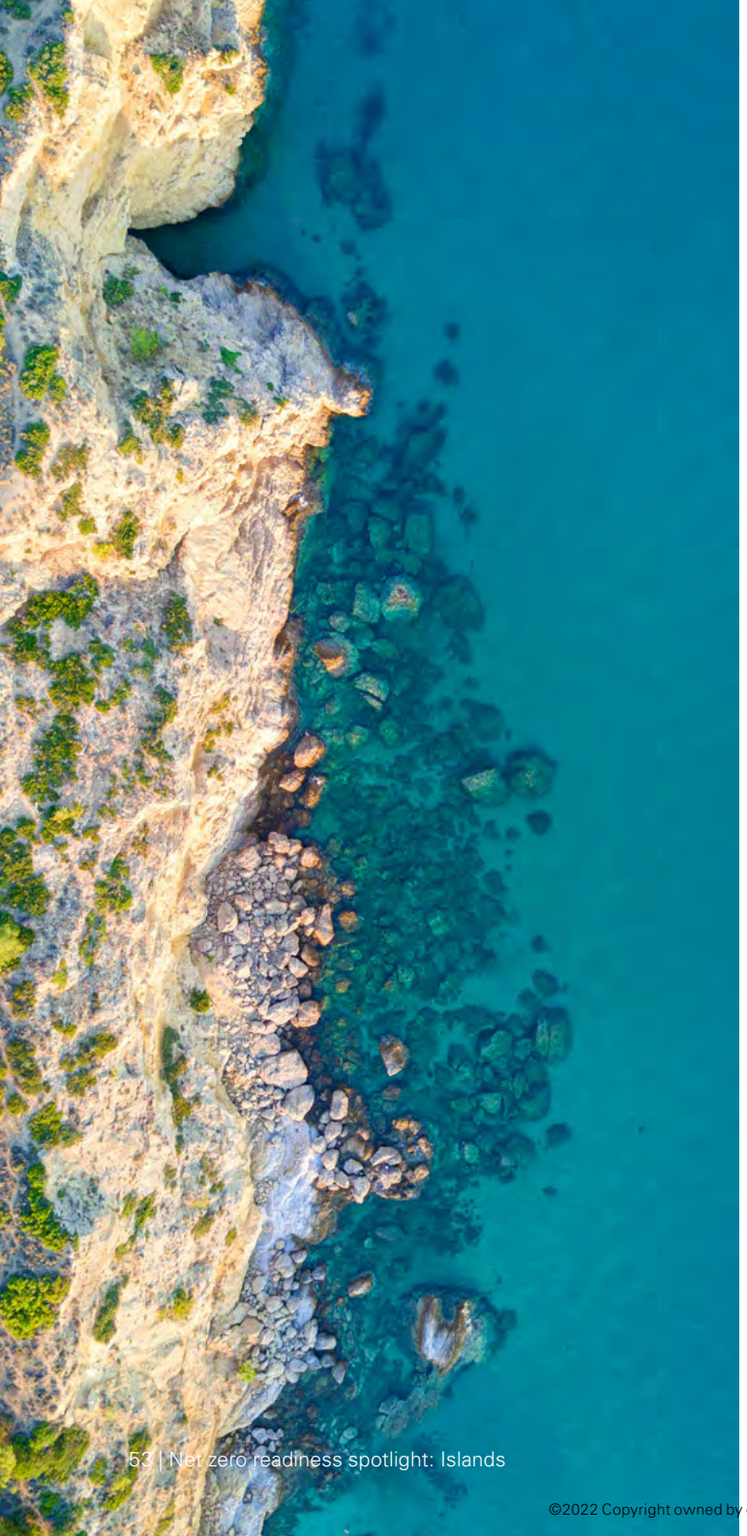
Appendix A: Methodology

Island economies assessed

Anguilla
Antigua and Barbuda
Aruba
The Bahamas
Bahrain
Barbados
Bermuda
British Virgin Islands
Cabo Verde
Cayman Islands
Cook Islands
Curaçao
Cyprus
Dominican Republic
Fiji
French Polynesia
Grenada
Guernsey
Isle of Man
Jamaica
Jersey
Maldives
Malta
Mauritius
New Caledonia
Palau
Papua New Guinea
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Samoa
Seychelles
Singapore
Solomon Islands
Trinidad and Tobago
Vanuatu

This report assesses 36 island economies using 19 different indicators organized into four pillars, detailed below. The data for each indicator has been normalized using the min-max method, which converts the variables to a range between zero and 100 by subtracting the minimum value, dividing by the range of the variable values and multiplying by 100. If a lower number represents greater progress towards net zero, the result is then subtracted from 100. This means that for each indicator, the top-ranked economy in each of the two groups receives 100 and the bottom one zero.

The indicators are organized into four pillars, which are used to assess the progress of economies in these areas; Contribution to decarbonization, Drivers of emissions, Policies and enabling environment and Energy supply and use. Each indicator weights either 0.5 or 1 within its pillar, listed on the following pages.



Contribution to decarbonization

Greenhouse gas emissions per person

Weight: **1**

Figures for 2018 measured in tonnes of carbon dioxide equivalent (tCO2e) per person from the European Commission's Emissions Database for Global Atmospheric Research (EDGAR)[133].

Emissions reduction progress

Weight: **1**

The percentage change between 2008 and 2018 in overall greenhouse gas emissions, source as above, with the most significant reduction scoring highest.

Presence of a net zero target

Weight: **0.5**

A commitment in law to reach net zero receives a score of one; a declaration, pledge or policy receives 0.5; and no target receives zero. Based on KPMG research supported by data from the World Resources Institute's Climate Watch platform[134] and Energy and Climate Intelligence Unit (ECIU)[135].

Ambition of net zero target

Weight: **0.5**

This is based on each economy's net zero target date, with 2030 receiving the highest score and 2080 or no target the lowest score, using KPMG research and Climate Watch data and ECIU as above.

Drivers of emissions

Emissions intensity of economic activity

Weight: **1**

Figures for 2018 measured in tonnes of carbon dioxide equivalent (tCO2e) scaled by gross domestic product in US dollars using 2017 purchasing power parity exchange rates. This is from the European Commission's Emissions Database for Global Atmospheric Research as above.

Momentum of decarbonization

Weight: **1**

The percentage change between 2008 and 2018 in the Emissions intensity of economic activity as above.

Emissions intensity of imports

Weight: **0.5**

Based on the sum of emissions intensities of economic activity (as above) of the exporting jurisdiction scaled by their proportions of domestic consumption. If an economy imports 20 percent of what it consumes equally divided between two exporting jurisdictions, this measure would be 10 percent of the first jurisdiction's emissions intensity plus 10 percent of the second's emissions intensity. This is based on Trade volumes data from the World Integrated Trade Solution (WITS)[136] and emissions intensity data from EDGAR[133].

Policies and enabling environment

Presence of a national governmental climate coordination body

Weight: **0.5**

Economies with a national ministry or department focused on climate change receive one mark, and those without receive zero. Based on KPMG research.

Presence of a national sustainability policy

Weight: **0.5**

Economies receive one mark if they have policies in place for sustainable development, 0.5 marks if policies are being developed, and zero marks if there are neither policies nor work to develop them. Based on KPMG research supported by data on climate laws and policies from the London School of Economics[137] and NewClimate Institute[138].

Enabling environment for climate finance

Weight: **1**

Economies receive one mark if they have either a domestic stock exchange, have issued climate-linked sovereign bonds in domestic or foreign capital markets, or both. They receive zero if they have neither. Based on KPMG research and Sustainable Stock Exchanges Initiative (SSEI)[139].

Experience with climate-linked finance instruments

Weight: **1**

The total value of the economy's climate-linked bonds in US dollars per person, using data from Climate Bonds Initiative.[140]

Credit rating

Weight: **1**

This is based on the average national credit risk scores from rating agencies Standard & Poor's, Moody's and Fitch, collated by Trading Economics.[141] Each agency's scores have been normalized from the highest score (AAA or Aaa) to the lowest. If only two of the agencies provide a risk score, these each represent 50 percent of the measure, and if only one is provided, this alone is used for the measure. However, if no rating is available from any of the three agencies, an economy receives a mark of zero.

Commitment toward the protection of fisheries

Weight: **0.5**

Based on the percentage of an economy's marine area where fisheries are protected to any degree or where there are plans to introduce this. Data is from the Marine Conservation Institute's Marine Protection Atlas[142] and the Isle of Man government[143].

Commitment toward the protection of biodiversity

Weight: **0.5**

Based on the percentage of key biodiversity areas which are either fully or partially protected by the economy. Data is from the Key Biodiversity Areas Partnership[144].

Energy supply and use

Share of renewable electricity

Weight: **1**

The most recently-available percentage of electricity is generated from renewable sources, including nuclear power. Data is from the International Renewable Energy Agency (IRENA)[145], augmented by other national and international sources and KPMG research.

Electricity access

Weight: **0.5**

The percentage of the population with access to electricity, including higher levels of access, reduces the use of local power generation from fossil fuels such as standalone diesel generators and other carbon-intensive sources. Data from IRENA and others as above.

Renewable electricity target

Weight: **1**

Based on the national target for the percentage of electricity to come from renewable sources. Data from IRENA and others as above.

Ban on sale of internal combustion engine vehicles

Weight: **1**

Economies that have announced a ban on the sale of internal combustion engine vehicles receive one mark, those which have not done so receive zero. Based on KPMG research.

Incentives for electric vehicles

Weight: **1**

Economies that have introduced incentives for using electric vehicles receive one mark, those which have not done so receive zero. Based on KPMG research.

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