



Financing needs to achieve Nationally Determined Contributions under the Paris Agreement in Caribbean Small Island Developing States

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Abstract

Caribbean Small Island Developing States (SIDS) are highly vulnerable to the impacts of climate change. Given high mitigation and adaptation costs and constrained domestic finances, they seek international funding to meet their climate objectives. This paper investigates Caribbean SIDS perspectives on the role of international climate finance in addressing climate change and its effectiveness in meeting climate goals. The paper first explored the climate financing needs of sixteen Caribbean SIDS through a content analysis of their Nationally Determined Contributions (NDCs). It then compares the climate finance needs of the region with international climate finance commitments received by examining climate finance trends using data from the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee's (DAC) Creditor Reporting System (CRS). The study revealed large gaps in estimating the climate finance needs of the region, as well as important patterns in the way climate finance is being distributed across mitigation, adaptation and overlap activity; principal versus significant climate objective; recipient country; sector; and source and type of funding. These findings are useful to help countries make decisions about how international climate finance should be used, and how its impacts should be evaluated and a basis for climate finance negotiations and dialogue with bilateral development partners and multilateral climate funds, and to assess whether available funds are being put to good use and identify problems that need to be addressed.

Keywords Climate finance · Small Island Developing States (SIDS) · Caribbean · Nationally Determined Contributions (NDCs) · Mitigation · Adaptation

1 Introduction

Caribbean Small Island Developing States (SIDS) face considerable threats from climate change demonstrated by increased frequency and intensity of tropical storms, heavier rainfall and longer periods of drought, as well as more long-term impacts from sea level rise

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and coastal erosion (Knutson et al. 2019; McLean et al. 2015). To manage and adapt to these impacts, the region faces considerable costs that surpass their domestic financial capacity (Mohan 2022a). These countries submitted ambitious national plans for climate action or Nationally Determined Contributions (NDCs) to the United Nations Framework Convention on Climate Change (UNFCCC) in advance of the twenty-first session of the Conference of the Parties (COP21) held in 2015 in Paris with the option to revise and update them in 5-year cycles to become more ambitious over time following ratification of the Paris Agreement. Indeed, these groups of small states were amongst the first countries globally to ratify and submit their NDCs. They submitted ambitious mitigation measures to reduce their greenhouse gas emissions in order to reach the goals of the Paris Agreement, together with actions they will take to build resilience to adapt to climate impacts.

Given that mitigation and adaptation costs far exceed Caribbean SIDS's own capacity, international financial support plays a significant role in augmenting government expenditure to achieve NDC goals. Under the UNFCCC, developed countries agreed to mobilize US\$ 100 billion per year by 2020 for developing countries including Caribbean SIDS to tackle climate change and to scale this figure up over time. International finance can make a huge difference between what governments pledge to do and what they actually do. It can be the difference between achieving or perhaps even exceeding NDC commitments, or failing to meet them. Moreover, Caribbean SIDS face restricted fiscal space and inadequate sources of domestic finance to implement their NDCs (Mohan 2022a). These countries have been experiencing low growth levels and are exposed to frequent external shocks especially natural disasters and regularly require funds for clean-up, relief and reconstruction, which has greatly increased government borrowing and consequently debt (Mohan and Strobl 2021). Also, the majority of countries in the region unlike SIDS in other parts of the world are ranked as middle to high income which hinders them from accessing Official Development Assistance (ODA) which remains the principal source of climate finance and international debt relief, and only a few meet the requirements for concessional borrowing from the World Bank and other donors.

While there have been increasing studies on international climate finance, the literature typically aggregates climate finance of Caribbean SIDS with special groupings including Latin America and other small island states which obscures the experiences of Caribbean countries (UNFCCC 2016; Mazza et al. 2016; Tortora and Soares 2016; Watson et al. 2016; OECD 2014; Canales et al. 2013). These studies generally do not provide individual country breakdowns, or a way to assess finance flows to Caribbean SIDS in particular, separate from Latin America and small states as a whole. Studies also use data that can overvalue climate finance flows by combining different sources which are generally not comparable, and may provide an approximation of patterns at the international level, and may include financial instruments such as equity and commercial loans that are not eligible to be reported as development assistance (Atteridge et al. 2017). There are also few studies on Caribbean SIDS perspectives on the role of international climate finance in addressing climate change and meeting NDC commitments. Additionally, although there is widespread discussion in academic and policy debates on quantities and sources of international climate finance there is as yet little comprehensive assessment of its effectiveness in meeting Caribbean countries' NDCs. Studies have not addressed the question how are Caribbean countries aligning available climate funds with their NDC targets.

In this context, it is important for Caribbean SIDS to have an overview of the international financial flows that are being mobilized to the region and to assess these against meeting the region's climate finance needs. This paper aims to fill this knowledge and policy gap by investigating the role of international climate finance in Caribbean SIDS in

funding their NDCs. More specifically, the paper adopted a content analysis to explore the climate financing needs of sixteen Caribbean island states as expressed in their intended and updated NDCs and made comparisons to the trends in international climate finance commitments received using data from the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee's (DAC) Creditor Reporting System (CRS) for the period 2015 and 2020. Overall, the study revealed important gaps in estimating the climate finance needs of the region and patterns in the way climate finance is being accessed and allocated and used in Caribbean SIDS and provides a basis for a deeper assessment of how climate finance is working for the achievement of NDC goals. It provides the foundation upon which to make strategic decisions about how international finance should be used, and how its impacts should be evaluated and a basis for climate negotiations in the UNFCCC and dialogue with bilateral development partners and multi-lateral climate funds to help Caribbean SIDS assess whether available funds are being put to good use and identify problems that need to be addressed.

The rest of the paper is organized as follows. Section 2 offers an overview of the literature on climate finance and NDCs in SIDS. Section 3 gives the methodology and data adopted by the paper. Section 4 presents the results of the paper and Section 5 discusses these results. Finally, Section 6 concludes the paper.

2 Literature on climate finance and NDCs in SIDS

Inadequate access to financing remains a chief constraint to achieving the Paris Agreement goals. Huge amounts of finance are needed for mitigation as large-scale investments are required to significantly reduce greenhouse gas emissions, as well as adaptation. The Paris Agreement called for financial assistance from Parties with more financial resources compared to those that are less endowed and more vulnerable. There is an acknowledgment that SIDS face financing challenges that restrict their capacity to prevent and cope with the consequences of climate change (Mohan 2022a; Mohan and Strobl 2021). The Paris Agreement provides a framework for financial support along with technology and capacity building from developed to developing countries which are in need of support and more vulnerable to climate impacts. SIDS generally state in their NDCs the financing obligation of developed countries. Financing from developed countries is however largely confined to mitigation, while their obligations under adaptation finance, and the guarantee role of international mitigation duty for obligation of financing has been minimal. Scaling up of both climate adaptation and mitigation finance is however vital to address the vulnerability of SIDS by making key sectors more resilient to climate impacts (Wisemberger 2020; Watson and Schalatek 2019). SIDS can also improve and coordinate the structure and content of their future NDCs in order to strengthen the transparency and comparability of financial demand; improve the fairness and science of the argument in the negotiation process; and provide a theoretical basis to consolidate their unified position (Pauw et al. 2018).

While the amount of money dedicated to climate funding has been increasing, the share of total funds going to SIDS is relatively modest. In 2017, climate-related funding to SIDS constituted around 2.2% of total climate funds (Wisemberger 2020). The Pacific region received the largest share of climate finance from multilateral climate funds (47%), followed by the Caribbean (34%), then Africa, Indian Ocean, Mediterranean and South China Sea (19 %) (Watson and Schalatek 2019). The majority of climate finance goes towards adaptation (54%), followed by mitigation (24%), while 5% goes to reducing emissions from

deforestation and forest degradation (REDD+) projects, and 17% to projects with multiple foci (Watson and Schalatek 2019). The focus on adaptation finance is consistent with SIDS high adaptation needs. In the Caribbean, however, approved mitigation finance is approaching similar totals for approved adaptation finance (Wisnberger 2020 and Watson and Schalatek 2019).

Grants make up the majority of climate finance in SIDS and are likely to remain important, particularly for adaptation actions. There are 12 multilateral climate funds active in SIDS. A total of US\$ 1689 million was approved for 255 projects between 2003 and 2018 (Watson and Schalatek 2019). Eighty percent of climate finance from multilateral climate funds is grant based, while 20% are concessional loans (Watson and Schalatek 2019). The Green Climate Fund (GCF) has been the largest contributor to climate change action in SIDS. It has cumulatively approved US\$ 600 million since 2015 (Watson and Schalatek 2019). The second largest contributor is the Least Developed Countries Fund (LDCF), which has approved US\$ 233 million, followed by the Pilot Program for Climate Resilience (PPCR), which has approved US\$ 218 million (Watson and Schalatek 2019). SIDS also benefit from bilateral climate finance and climate-related bilateral ODA (Atteridge et al. 2017). This raises concerns that climate finance is not new and additional, and it may simply divert ODA from other pressing development objectives. While approved climate funding for SIDS has increased significantly in the past few years, it fulfils only a small part of actual needs in SIDS.

The literature highlights that SIDS face a number of challenges when trying to access or use international climate finance. Tortora and Soares (2016) identified institutional and policy constraints; reliance on a single provider for finance; fragmented climate finance across a large number of projects; sector-wide approaches with limited budget; funding after large natural disasters while long-term funding is scarce; and complex requirements and processes for accessing finance. According to Hart (2013), SIDS issues and challenges are poorly understood at the international level and this is exacerbated by these countries not having a strong voice in the decision-making of key international financial institutions.

Atteridge et al. (2017) analysed climate finance flows to Caribbean SIDS over the period 2010 to 2015, using data from the OECD DAC CRS. The paper shows that a total of US\$ 1477 million in climate finance (principally targeted projects) was committed to Caribbean SIDS from 2010 to 2015. The Dominican Republic, Guyana, Haiti, Cuba and Jamaica received the largest amounts. Forty-eight percent of total climate finance was for mitigation, 32% was for adaptation and 20% targeted both (Atteridge et al. 2017). In the Dominican Republic and Guyana, a significant portion of funds represents large investments in mitigation activities. Additionally, Antigua and Barbuda, Cuba and Grenada have been allocated more funding for mitigation than for adaptation. Sixty-two percent of the finance was provided as grants and 38% from loans (Atteridge et al. 2017). Looking at bilateral and multilateral sources, about 85% of total finance came from bilateral sources, while multilateral sources contributed 15% (Atteridge et al. 2017). About 77% of total climate finance was delivered as project-based support. The largest sources of total funding were from France, followed by Norway, the World Bank Climate Investment Funds (CIF); European Union (EU) institutions; Canada, the Global Environment Facility (GEF); and Japan, the PPCR and the Clean Technology Fund. Most of the amounts from France and the CIF were in the form of ODA loans, while other sources provided grants. The total amount of climate finance is heavily influenced by just two relationships: Norwegian finance to Guyana, and French finance to the Dominican Republic. The sector that received the largest share of climate finance is environment protection (Atteridge et al. 2017). The dominance of this sector is related to a single large amount directed to Guyana, which is actually

for forest protection. The second most targeted sector was transport and this relates to the expansion of the metro system in the Dominican Republic and bridge reconstruction and road infrastructure to connect agricultural markets in Haiti (Atteridge et al. 2017). Disaster prevention and preparedness was also a large recipient sector. Some sectors that are likely to be critical for long-term resilience, such as health and education, have not received any climate finance. This suggests that countries may be finding it difficult to align available climate funds with complementary development priorities.

3 Methodology and data

The objective of this paper is to investigate the role of international climate finance in helping Caribbean SIDS meet their climate financing needs as expressed in their NDCs under the Paris Agreement. In doing so, the paper provides an assessment of how these island states are actually financing their NDCs through international finance which is currently the major source of climate funding and to understand their perspective on the role of international climate finance in addressing climate change. To achieve this, the paper does two things. Firstly, it conducted a content analysis of sixteen Caribbean SIDS intended and updated NDCs to identify mitigation and adaptation ambition and their associated costs together with national-level decisions or intentions with regard to international climate financing options. In doing so, the paper builds on Mohan (2022a) which undertook a similar content analysis of Caribbean NDCs and financing but only looked at intended NDCs. Secondly, the paper identifies trends in international climate financing to Caribbean SIDS in total ODA committed to mitigation and adaptation reported through the OECD DAC CRS for 16 Caribbean SIDS between 2015 and 2020—the period during which intended and updated NDCs were submitted and the latest year for which data are available at the time of writing. The dataset includes climate-related development finance from bilateral, multilateral and private philanthropic sources, where concessional and non-concessional activities are included but guarantees are excluded because they are categorized as non-flow operations. This analysis presents an updated analysis of the study by Atteridge et al. (2017) on international climate finance flows into the Caribbean which looked at the period 2010 to 2015.

The data for the content analysis come from sixteen Caribbean SIDS intended and updated NDCs which gives a total of 32 documents downloaded from the UNFCCC website.¹ The coding categories selected were mitigation and adaptation goals and objectives, time frame and sector coverage; the extent to which countries identified estimates of costs of implementation of NDCs; and the degree to which greenhouse gas emission reduction goals were dependent on international assistance (conditional) versus achievable with domestic resources (unconditional). The use of NDCs in research however presents limitations. There is hardly any guidance to countries on how to prepare their NDCs in terms of scope and content including how to formulate their mitigation contribution and whether or not to include adaptation (Pauw et al. 2018). This results in NDCs varying in terms of scope, content and length which can hinder robust understanding of countries' ambitions and priorities and for making comparisons. More importantly, there is no guidance on the role of finance and cost estimates when countries prepare their NDCs (Pauw et al. 2018).

¹ <https://unfccc.int/documents>

Despite this, the NDCs are the most comprehensive and comparable climate development plans countries produce.

The trend analysis then evaluated submitted NDC financing needs for mitigation and adaptation against committed mitigation and adaptation finance from the OECD DAC CRS. This involved the identification of trends based on mitigation, adaptation and overlap activity; principal (when the climate objective is explicitly stated as fundamental in the design of or the motivation for the activity) versus significant (when the climate objective is explicitly stated but it is not the fundamental driver or motivation for undertaking the activity) financing; recipient country; sector; and source and type of funding. While the OECD DAC CRS requires donors to indicate whether the funds target one of the four Rio Markers—mitigation, adaptation, biodiversity and/or desertification (OECD 2014)—the system has limitations which can affect the reliability of the data (Michaelowa and Michaelowa 2011). It mainly captures bilateral financing from OECD DAC members and, to a lesser extent, multilateral funds. Non-OECD DAC members may therefore be excluded as well as some multilateral financing. Also, the data comprise commitment data and not disbursement data. The data are also self-reported and reporting standards are likely to vary across countries. Furthermore, not all development assistance programs are screened to determine whether they include a climate focus. There may therefore be flows targeting climate activities that are not captured. Despite these limitations, the Rio Markers System is the most advanced system to monitor, report and verify international climate finance across countries.

4 Results

4.1 Costing NDC mitigation and adaptation targets

Caribbean SIDS set out ambitious mitigation and adaptation targets in their NDCs which require significant finance to move from aspiration to implementation. As seen in Table 1, all countries except Cuba and St. Lucia stated that the type of mitigation coverage was economy-wide. Countries nevertheless identified key sectors, namely energy; agriculture; transport; waste; land use, land use change and forestry (LULUCF); and industry. The target year for implementation and the investment period was mainly 2030, although some countries have listed 2025 (Guyana and St. Vincent and the Grenadines), while others have more than one target year such as Barbados, St. Kitts and Nevis, Suriname (2025 and 2030) and Dominica (2020, 2025 and 2030).

The mitigation targets focused primarily on transitioning from fossil fuel-based energy to renewable sources and greenhouse gas removals from agriculture and LULUCF. Countries also increased their ambition and better-defined mitigation targets in cases where updated NDCs were submitted. For example, Antigua and Barbuda increased its target from 50 MW to 86% renewable electricity generation and added that 100% of new vehicle sales would be electric by 2030. Cuba initially stated that it would increase its renewable electricity share, while its updated NDCs specified that it would increase electricity generation from renewable sources by 24% and increase forest coverage to 33% by 2030. Belize stated that it intends by 2030 to avoid cumulative emissions of 5647 kt of carbon dioxide equivalent and to transition towards 85% renewable electricity and 63% greenhouse gas removals from agriculture and LULUCF. Grenada committed to reducing greenhouse gas emissions by 40% compared to 2010 emissions levels by 2030. Dominica committed to

Table 1 Financing Caribbean SIDS mitigation and adaptation NDCs

Country	Mitigation target	Baseline year	Time period	Sector	Adaptation	International financing
Antigua and Barbuda	86% renewable electricity 100% electric vehicles (conditional)	-	Pre 2020–2030	Energy Transport Agriculture Waste LULUCF	Desalination Disaster proof buildings Renewable electricity Protected waterways Disaster insurance	Green Climate Fund Global Environmental Facility Adaptation Fund Multilateral agencies Bilateral agreements
The Bahamas*	30% GHG reduction (partly conditional)	BAU	2020–2030	Energy Transport LULUCF	Food security Protect at risk groups Disaster insurance Relocation of communities Vehicle emissions standards Reverse osmosis facility	Global Environment Facility Multilateral agencies Bilateral agreements
Barbados	30% GHG reduction (unconditional) 70% GHG reduction (conditional)	BAU	N/A–2030	Energy Transport Agriculture Waste LULUCF Industry	Sustainable tourism Coastal zone management Storm water management Sectoral plans—agriculture, fisheries, water, health	Multilateral agencies
Belize	85% renewable electricity 63% GHG removals from AFOLU Avoid 5647 kt CO ₂ e GHG emissions (conditional)	-	2015–2030	Energy Transport Waste LULUCF	Sea and river defence Food security Watershed management Disease control	Green Climate Fund (REDD+)
Cuba	24% renewable sources 33% increase in forest coverage (partly conditional)	-	N/A–2030	Energy Transport Agriculture LULUCF	Sustainable buildings	Multilateral agencies

Table 1 (continued)

Country	Mitigation target	Baseline year	Time period	Sector	Adaptation	International financing
Dominica*	17%, 39% and 44% GHG reduction (conditional)	2014	2016–2030	Energy Transport Agri-culture Waste LULUCF Industry	Renewable electricity Disaster preparedness Food security Protect at risk groups	Climate Investment Fund (PPR) Global Environmental Facility Green Climate Fund Clean Technology Fund Green Climate Fund (REDD+) Multilateral agencies
Dominican Republic	7% GHG reduction (unconditional) 27% GHG reduction (conditional)	BAU	2021–2030	Energy Transport Agri-culture Waste LULUCF Industry	Water and food security Climate resilient cities Health Ecosystems biodiversity Tourism Coastal management	
Grenada	40% GHG reduction (partly conditional)	2010	2020–2030	Energy Transport Waste LULUCF Industry	-	Green Climate Fund Climate Investment Fund (PPCR) Multilateral agencies Bilateral Agreements Bilateral Agreement Green Climate Fund (REDD+)
Guyana*	Avoid 52Mt CO ₂ in emissions 20% renewable sources (unconditional) 100% renewable electricity (conditional)	-	N/A–2025	Energy LULUCF	Water management Food security Flood defence Mangrove restoration Early warning systems Enhanced weather forecasting	
Haiti*	6.32% GHG reduction (unconditional) 25.5% GHG reduction (conditional)	BAU	2016–2030	Energy Agriculture Waste LULUCF	Watershed management Protect coastal areas Green economy Sustainable agriculture	Climate Investment Fund (PPCR)

Table 1 (continued)

Country	Mitigation target	Baseline year	Time period	Sector	Adaptation	International financing
Jamaica	25.4% GHG reduction (unconditional) 28.5% GHG reduction (conditional)	BAU	2005–2030	Energy Agriculture LULUCF	Sustainable agriculture Agroforestry Aquaculture	Climate Investment Fund (PPCR)
St. Kitts and Nevis	61% GHG reduction (conditional)	BAU	2020–2030	Energy, Transport Agriculture Waste LULUCF Industry Energy Transport	Watershed management Coastal infrastructure	Multilateral agencies Bilateral Agreements
St. Lucia	7% GHG reduction (conditional)	2010	N/A–2030		Tourism water Agriculture fisheries Infrastructure and spatial planning Resilient ecosystems Education health	Climate Investment Fund (PPCR) Green climate Fund (REDD+)
St. Vincent and the Grenadines*	22% GHG reduction (conditional)	BAU	N/A–2025	Energy Transport Agriculture Waste LULUCF Industry	Public awareness Infrastructure Coastal management Marine ecosystems Agriculture health Environmental management	Climate Investment Fund (PPCR) Green Climate Fund (REDD+)
Suriname	Renewable electricity above 35% (unconditional) 93% forest cover of more than 15.2 Mha (conditional)	2008	2020–2030	Energy Transport Agriculture LULUCF	Data and information collection systems National technical capacity Gender innovative finance	Green Climate Fund (REDD+)
Trinidad and Tobago*	15% GHG reduction (conditional) Reduce public transportation emissions by 30% (unconditional)	BAU	N/A–2030	Energy Transport Industry	-	Green Climate Fund

Source: author's compilation based on countries' intended and updated NDCs. Notes: *Does not include updated NDCs

reduce greenhouse gas emissions below 2014 levels by 17.9% in 2020, 39.2% in 2025 and 44.7% in 2030. The Bahamas intends by 2030 to reduce greenhouse gas emissions by 30% compared to business as usual. St. Kitts and Nevis aimed to reduce its carbon dioxide emissions by 61% by 2030 compared to 2010 levels. St. Vincent and the Grenadines intends to achieve a reduction in greenhouse gas emissions of 22% compared to business as usual by 2025.

In some instances, countries gave conditional (dependent on international finance) and unconditional (not dependent on international finance) mitigation targets. Barbados intends to achieve a 70% reduction in greenhouse gases relative to business as usual in 2030 with international financial support and a 35% reduction without international finance. The Dominican Republic pledged by 2030 compared to business as usual to reduce emissions by 20% conditional on external finance and 7% unconditional. Haiti in its conditional contribution agreed to reduce greenhouse gas emissions by 25.5% and for its unconditional contribution by 6.32% in comparison to business as usual by 2030. Jamaica vowed a 28.5% greenhouse gas reduction upon receiving international finance and 25.4% reduction without support. Guyana committed that by 2025 to provide up to 52 Mt of carbon dioxide equivalent. It also pledged to unconditionally increase its renewable energy share by 20% of its total energy usage with this figure going to 100% with conditional support. Suriname affirmed 93% forest cover as conditional and a renewable electricity target above 35% as unconditional by 2030. Trinidad and Tobago declared a 15% reduction in greenhouse gas emissions from business as usual by 2030 as requiring international finance and to unconditionally reduce its public transportation emissions by 30% compared to 2013 levels. Mitigation targets in six countries were fully conditional on receiving outside financial support—Antigua and Barbuda; Belize; Dominica; St. Kitts and Nevis; St. Lucia; and St. Vincent and the Grenadines. The Bahamas, Cuba, Guyana and Grenada did not provide conditional and unconditional mitigation goals but stated that their targets were partly conditional on external finance.

All Caribbean SIDS apart from Grenada and Trinidad and Tobago included adaptation targets in their NDCs. Costly investments in water and food security, climate smart agriculture, climate proof tourism, health, coastal zone management, infrastructure development, disaster risk management, sustainable construction, natural disaster insurance schemes and consideration of vulnerable population are required to meet adaptation targets. Caribbean countries indicated that these adaptation targets were contingent upon receiving international finance.

Caribbean SIDS stated that international finance from multilateral agencies, bilateral partners and international climate funds was required although very few details were provided. These funds will be used to leverage the inadequate domestic finances in Caribbean SIDS in responding to climate change. Antigua and Barbuda, the Bahamas, Grenada, Guyana and St. Kitts and Nevis listed bilateral agreements. The Guyana Norway partnership is world famous as the first agreement signed since 2009 between a developed and developing country to provide funding for avoided deforestation-based performance indicators. Countries that broadly acknowledged multilateral agencies as sources of finance included Antigua and Barbuda, the Bahamas, Barbados, Cuba, the Dominican Republic, Grenada and St. Kitts and Nevis. Barbados obtained a loan from the Inter-America Development Bank to establish the Energy Smart Fund, which provides financial and technical support to renewable electricity and energy efficiency projects.

The upper middle-income status of the majority of Caribbean SIDS nonetheless complicates accessing multilateral and bilateral funding as the international community employs the criterion of income to access grants and concessional financing. In cases where climate finance funds were recognized, the most popular was the Green Climate Fund (GCF),

Table 2 Estimated mitigation and adaptation cost, US\$ billion (2015–2030)

Country	Mitigation	Adaptation	Total
Antigua and Barbuda	0.850	0.850	1.700
The Bahamas	-	-	-
Barbados	-	-	-
Belize	1.39	0.318	1.708
Cuba	-	-	-
Dominica	0.099	0.025	0.124
Dominican Republic	8.9	8.600	17.500
Grenada	1.055	-	1.055
Guyana	-	1.600	1.600
Haiti	8.773	16.614	25.387
Jamaica	-	-	-
St. Kitts and Nevis	0.637	0.127	0.764
St. Lucia	0.368	-	0.368
St. Vincent and the Grenadines	-	-	-
Suriname	2.492	1	3.492
Trinidad and Tobago	2	-	2
Total	26.564	29.134	55.698

Source: author's compilation based on countries' intended NDCs and updated NDCs

followed by the Climate Investment Fund (CIF) and the Global Environment Facility (GEF). The Pilot Program for Climate Resilience (PPCR) was also popular and forms a regional program across six countries—Dominica, Grenada, Haiti, Jamaica, St. Lucia and St. Vincent and the Grenadines. Additionally, reducing emissions from deforestation and forest degradation (REDD+) was present in Belize, the Dominican Republic, Guyana, St. Lucia, St. Vincent and the Grenadines and Suriname.

The cost estimates of Caribbean SIDS NDCs for the period generally ending 2030 are given in Table 2. Ten countries provided clear estimates of their mitigation costs, an increase from eight in the first submitted NDCs—Antigua and Barbuda US\$ 0.85 billion, Belize US\$ 1.39 billion, Dominica US\$ 0.099 billion, the Dominican Republic US\$ 8.9 billion, Grenada US\$ 1.055 billion, Haiti US\$ 8.773 billion, St. Kitts and Nevis US\$ 0.637 billion, St. Lucia US\$ 0.368 billion, Suriname US\$ 2.492 billion and Trinidad and Tobago US\$ 2 billion. Eight countries provided adaptation costs estimates: Antigua and Barbuda US\$ 0.85 billion, Belize US\$ 0.318 billion, Dominica US\$ 0.025 billion, the Dominican Republic US\$ 8.6 billion, Guyana US\$ 1.6 billion, Haiti US\$ 16.614 billion, St. Kitts and Nevis US\$ 0.127 billion and Suriname US\$ 1 billion. These figures give a total mitigation cost of US\$ 26.564 and a total adaptation cost of US\$ 29.134 and a combined figure of US\$ 55.698. These numbers are higher than the estimates provided in the initial NDCs where mitigation cost for the eight countries totalled US\$ 23.1 billion and adaptation cost for six countries were US\$ 28 billion giving a sum of US\$ 51.325 billion. It is clear that as more countries provide estimates, more detailed budgets and more ambitious goals mitigation and adaptation cost for the region would rise. It should also be noted that these figures omit estimates from five countries; thus, the aggregate regional number could indeed be much higher.

Table 3 Estimates of renewable energy needs

Renewable energy	Renewable energy potential (MW)	Total installed cost (US\$/kW)	Investment (US\$ billion)
Solar	3000	857	2.571
Wind	30,000	1325	39.750
Hydropower	9700	2135	20.710
Biomass	250	2353	0.588
Total			63.619

Source: author's compilation using data from GDP Global 2016 and IRENA [2022](#)

Given missing information on Caribbean SIDS climate finance needs in their NDCs, other studies and available data can help to develop a more complete picture of the investment needs of the region. A study on investing in the renewable energy sector in Caribbean SIDS prepared for the Caribbean Association of Investment Promotion Agencies and the Caribbean Export Development Agency funded by the Inter-American Development Bank states that the electricity demand for the region is expected to double by 2027 because of increases in population and market size and non-fossil fuel-based energy will play a key role in meeting these future capacity requirements (GDP Global Development [2016](#)). The study goes on to estimate the renewable energy demand for the region. Table 3 combines these renewable energy estimates with the total installed cost of renewable energy from International Renewable Energy Agency's (IRENA) estimates of renewable power generation for 2021 to provide a value for the renewable energy financing needs of Caribbean island states. It is estimated that the region has 3000 MW of solar energy potential, and when combined with a total installed cost for solar power of US\$/kW 857, this gives an investment figure of US\$ 2.571 billion. Wind power potential for the region is calculated to be 30,000 MW with a total installed cost of US\$/kW 1325 for wind power, producing a financing need of US\$ 39.75 billion. The region has 9700 MW of hydropower potential with a total installed cost of US\$/kW 2135 for hydropower, giving a cost of US\$ 20.71 billion. Biomass for the region has a potential of 250 MW and a total installed cost of US\$/kW 2353, providing an investment figure of US\$ 0.588 billion.

These figures combine to give a total renewable energy financing need of US\$ 63.619 billion given unexploited renewable energy potential in the region. This total which represents reducing greenhouse gas emissions in the energy sector only surpasses the estimates of mitigation and adaptation activity contained in Caribbean SIDS NDCs by US\$ 12.294 billion and thus provides an indication of the magnitude of underestimation of the climate finance needs for the region contained in their submitted NDCs. Moreover, Mohan ([2022b](#)) in a study of the energy and transport sector for Caribbean SIDS using available data in submitted NDCs provides a much lower mitigation cost of US\$ 11 billion again highlighting the point that Caribbean SIDS NDCs do not provide comprehensive cost estimates for climate activity. The study nonetheless noted that the cost estimates were not complete and represent part of the financing required as all electricity and transport projects were not costed.

Other studies focused on the energy sector in the Caribbean correspondingly indicate that the cost estimates currently found in submitted NDCs undervalue the true

amount of climate finance required. The Caribbean Development Bank (CDB) has calculated that Caribbean SIDS require US\$ 30 to US\$ 40 billion over the next 3 to 10 years to expand renewable electricity and sustainable transport (CDB 2014 and CDB 2022). The CDB further purports that massive amounts of investments are needed to replace obsolete and inefficient generating plants and to transform the electricity infrastructure so that the region's renewable energy potential can be exploited using innovative, flexible and affordable financing instruments (CDB 2014). Masson et al. (2020) in a study of renewable energy pathways for the 13 Caribbean island states that make up the Caribbean Community (CARICOM)² estimate that the group needs to invest US\$ 11 billion over the next 10 years to undertake a sustainable energy transformation scenario designed to maximize net economic benefits from renewable energy, energy efficiency and resilience.

In 2016, the Government of the Dominican Republic requested IRENA to provide a roadmap on the realistic potential for renewables in the country's power mix by 2030. The study found that the total annual average investment needed for renewable energy to make up 25% of electricity needs over the period 2016–2030 amounted to US\$ 695 million (IRENA 2016). Similarly, the Government of Antigua and Barbuda partnered with IRENA to evaluate potential pathways to achieve a 100% renewable energy share by 2030 in its power and transport sectors. The study shows that under the optimal system scenario, the country would need to invest US\$ 388 million in initial capital, and when deploying electric vehicles together with the optimal system, this initial investment will increase to US\$ 498 million because of the additional battery storage required (IRENA 2021). These costs can even be higher as the most expensive scenario of 100% renewables without green hydrogen production requires US\$ 783 million because of the significant amount of storage, solar PV and wind turbines required to achieve the 100% target without investing in hydrogen (IRENA 2021). Other Caribbean SIDS are yet to produce renewable energy road maps which give comprehensive cost breakdowns for transitioning the energy sector to net-zero.

Looking at financing needs in other sectors, Kissinger et al. (2019) in a study of the LULUCF sector in developing countries found that despite the clarity expressed by 39 out of the 40 countries looked at regarding targets and activities, just 14 provided clear cost estimates for their proposed climate-related land and forest activities. Caribbean SIDS are therefore not unique in lacking information on their climate cost needs. The mitigation cost estimates for the 14 countries totalled US\$ 20.6 billion and the adaptation cost estimates totalled US\$ 10.5 billion with the timeline for investment being 2020–2030 (Kissinger et al. 2019). This provides an indication of the large sums required for climate action in LULUCF whether in Caribbean SIDS or other developing countries. Guyana was the only Caribbean island included in the study and listed its forest sector adaptation needs at US\$ 1600 million (Kissinger et al. 2019). Mohan (2022c) explored the potential of REDD+ to support Caribbean island states efforts in achieving their climate goals in LULUCF. Four countries gave budgets to cover just the administrative and technical costs of implementing REDD+ over 4 years which amounted to US\$ 29.83 million (Belize US\$ 4.17 million, Dominican Republic US\$ 6.97 million, Guyana US\$ 8.59 million and Suriname US\$ 10.10 million).

² Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago

Table 4 Total climate finance commitments, US\$ billion (2015–2020)

Country	Mitigation	Adaptation	Overlap	Total
Antigua and Barbuda	0.038	0.05	0.021	0.109
The Bahamas	0	0	0	0
Barbados	0	0	0	0
Belize	0.055	0.123	0.023	0.201
Cuba	0.134	0.160	0.055	0.349
Dominica	0.044	0.093	0.01	0.147
Dominican Republic	0.86	0.43	0.085	1.375
Grenada	0.014	0.132	0.005	0.151
Guyana	0.115	0.055	0.042	0.212
Haiti	0.57	1.154	0.413	2.137
Jamaica	0.166	0.118	0.031	0.315
St. Kitts and Nevis	0	0	0	0
St. Lucia	0.021	0.031	0.003	0.055
St. Vincent and the Grenadines	0.024	0.14	0.003	0.167
Suriname	0.088	0.111	0.007	0.206
Trinidad and Tobago	0	0	0	0
Regional	0.539	0.673	0.521	1.733
Total	2.668	3.270	1.221	7.159

Source: author's compilation based on OECD DAC CRS

4.2 Climate finance commitments to Caribbean SIDS

As seen in Table 4, a total of US\$ 7.159 billion in climate finance aid was committed to Caribbean SIDS for the period 2015 to 2020; of this, US\$ 2.668 billion went towards mitigation and US\$ 3.270 billion went towards adaptation, while US\$ 1.221 billion overlapped to both mitigation and adaptation. A breakdown of these figures by principal versus significant finance shown in Tables 8 and 9 in the Appendix indicates that funding targeting climate change projects as a principal objective (mitigation US\$ 0.566 billion and adaptation US\$ 0.931 billion) was lower than projects with climate change as a significant objective (mitigation US\$ 1.182 billion and adaptation US\$ 1.381 billion) while a substantial portion of funds were classified as not targeting any climate objective.

An examination of individual countries indicates that there were large differences in the amounts received. The biggest allocation went to Haiti (US\$ 2.137 billion) followed by the Dominican Republic (US\$ 1.375 billion), Cuba (US\$ 0.349 billion), Jamaica (US\$ 0.315 billion), Guyana (US\$ 0.212 billion), Suriname (US\$ 0.206 billion) and Belize (US\$ 0.201 billion). In terms of mitigation, the largest funding went to the Dominican Republic (US\$ 0.86 billion), followed by Haiti (US\$ 0.57 billion), Jamaica (US\$ 0.166 billion), Cuba (US\$ 0.134 billion) and Guyana (US\$ 0.115 billion). For adaptation, the largest share went to Haiti (US\$ 1.154 billion), followed by the Dominican Republic (US\$ 0.430 billion), Cuba (US\$ 0.160 billion), St. Vincent and the Grenadines (US\$ 0.140 billion) and Grenada (US\$ 0.132 billion). Four countries received no climate assistance for mitigation and adaptation over the period—the Bahamas,

Table 5 Distribution of climate finance by sector (2015–2020), US\$ billion

Sector	Mitigation	Adaptation	Overlap	Total
Energy	0.936	0.184	0.175	1.295
Agriculture, forestry and fishing	0.401	0.642	0.252	1.295
Transport and storage	0.273	0.554	0.189	1.016
Other multisector	0.315	0.450	0.201	0.966
General environment protection	0.214	0.236	0.115	0.566
Disaster prevention and preparedness	0.071	0.356	0.063	0.490
Water supply and sanitation	0.087	0.298	0.074	0.459
Health	0.067	0.16	0.057	0.284
Education	0.051	0.068	0.041	0.160
Reconstruction, relief and rehabilitation	0.012	0.107	0.012	0.131
Government and civil society	0.046	0.063	0.014	0.123
Other social infrastructure and services	0.023	0.021	0.002	0.046
Banking and financial services	0.029	0.003	0.001	0.033
Industry, mining and construction	0.031	0.038	0.017	0.086
Other sectors	0.014	0.043	0.013	0.070
Business and other services	0.002	0.013	0.002	0.017

Source: author's compilation based on OECD DAC CRS

Barbados, St. Kitts and Nevis and Trinidad and Tobago. There was however a regional allocation of US\$ 1.733 billion (US\$ 0.539 billion for mitigation, US\$ 0.673 billion for adaptation and US\$ 0.521 billion for overlap activities) from which these countries may have benefitted.

Over the period 2015–2018, there was an increase in total climate ODA commitments to the region from US\$ 0.632 billion to US\$ 2.276 billion, while 2019 and 2020 experienced a decline to US\$ 1.307 billion and US\$ 0.491 billion respectively (Fig. 1 in the Appendix). In fact, the finance commitments were lower in 2020 than 2015. Looking at climate aid over mitigation and adaptation and overlap activities, the same trends hold of an initial increase followed by a decrease. Over 2015 to 2020, adaptation projects received a larger portion of funding (48%) compared to mitigation projects (35%) with overlap (17%) receiving the lowest share. In 2015, finance going to principal projects (US\$ 0.245 billion) was just slightly higher than significant projects (US\$ 0.149 billion); however, for the remaining years, these trends quickly reversed with significant projects receiving a much larger share of international finance (Fig. 2A in the Appendix).

Table 6 Sources of financing commitments (2015–2020), US\$ billion

Sector	Mitigation	Adaptation	Overlap	Total
Bilateral partner	1.586	1.994	1.167	4.748
Multilateral development bank	0.894	0.984	0.03	1.908
Other multilateral	0.162	0.257	0.032	0.451
Private donor	0.001	0.002	0.001	0.004

Source: author's compilation based on OECD DAC CRS

Table 7 Distribution of climate finance by financial instrument 2015–2020, US\$ billion

Financial instrument	Mitigation	Adaptation	Overlap	Total
Grant	1.414	2.161	1.114	4.688
Debt	1.237	1.077	0.116	2.43

Source: author's compilation based on OECD DAC CRS

As seen in Table 5, the two sectors receiving the largest share of financing were energy (mitigation US\$ 0.936 billion, adaptation US\$ 0.184 billion and overlap US\$ 0.175 billion) and agriculture, forestry and fishing (mitigation US\$ 0.401 billion, adaptation US\$ 0.642 billion and overlap US\$ 0.252 billion), followed by transport and storage (mitigation US\$ 0.273 billion, adaptation US\$ 0.554 billion and overlap US\$ 0.189 billion).

The largest source of funding shown in Table 6 was through bilateral partners (mitigation US\$ 1.586 billion, adaptation US\$ 1.994 billion and overlap US\$ 1.167 billion), followed by multilateral development banks (mitigation US\$ 0.894 billion, adaptation US\$ 0.984 billion and overlap US\$ 0.03 billion), other multilateral source (mitigation US\$ 0.162 billion, adaptation US\$ 0.257 billion and overlap US\$ 0.032 billion) and private donors (mitigation US\$ 0.001 billion, adaptation US\$ 0.002 billion and overlap US\$ 0.001 billion). The top bilateral partners that provided funding (in rank order) were Canada, the UK, France, the USA, Germany and Japan. These countries together contributed 35% of total committed flows. The largest sources of multilateral finance came from the Inter-American Development Bank (13% of total flows) and the World Bank (10% of total flows). As shown in Table 7, the majority of the funding to the region came in the form of grants (US\$ 1.414 billion mitigation, US\$ 2.161 billion adaptation and US\$ 1.114 billion overlap) compared to debt (US\$ 1.237 billion mitigation, US\$ 1.077 billion adaptation and US\$ 0.116 billion overlap).

5 Discussion

Over the period 2015–2030, a total of US\$ 55.698 billion in climate finance would be demanded by Caribbean SIDS to achieve their climate objectives in comparison to the period 2015–2020 where US\$ 7.159 billion in climate finance was actually allocated. This represents one third of the time period for the achievement of NDC goals but just 13% of total climate financing needs. These cost estimates come from Caribbean SIDS intended and updated NDCs and are higher than the estimates from intended NDCs of US\$51.3 billion (Mohan 2022a), which demonstrates rising future costs and ambition. Across mitigation and adaptation, a similar shortfall in cost estimates and finance committed exists: 10% for mitigation and 11% for adaptation. These results strongly suggest that the region is likely to suffer a significant climate finance gap. Moreover, the high-income status of Caribbean SIDS means that they are a low priority for the allocation of scarce international climate finance. Additionally, the actual disbursement of climate funds is low across the Caribbean and can be less than 10% in some countries (Atteridge et al. 2017). According to Mohan (2022a) because of this shortfall, Caribbean SIDS cannot remain dependent on international climate finance but must adopt innovative and diversified finance options in order to achieve their climate goals. The climate finance gap also signals the importance of developed countries to honour their commitments to increase the amount of international

finance to achieve the Paris Agreement goals notwithstanding economic challenges brought about by the pandemic.

Of the total ODA committed, 36% was reported as significantly targeting climate change projects, while just 21% principally targeted climate change projects. The amount of finance principally targeting climate change projects has however increased as Atteridge et al. (2017) reported that for the period 2010–2015, around 6% of ODA climate finance principally targeted climate change. A concern from the data is that the region experienced a downward trend in international climate finance since 2019 which may have resulted from the negative economic impact of the coronavirus disease of 2019 (COVID-19). A study by the World Resources Institute shows that globally international climate finance has decreased during the pandemic; between 2019 and 2020, the proportion of ODA for projects with climate as a principal objective fell from 18% to 14% and for projects with climate as a significant focus fell from 25% to 17% where loans represented the main financing instrument causing a delay in climate-related projects (Alayza and Caldwell 2021).

The shortfall in climate finance suggests that Caribbean SIDS have been unsuccessful in attracting adequate levels of international finance relative to the cost of NDC implementation. This trend holds across all SIDS not just in the Caribbean. In 2019 of the US\$ 100 billion per year in climate finance pledged to developing countries, only US\$ 79.6 billion was raised and SIDS globally had access to just US \$1.5 billion (UN 2021). Given the adverse impacts of COVID-19, OECD forward-looking scenarios suggest that only in 2023 the US\$ 100 billion per year target in climate finance to developing countries would be met (UN 2021). This highlights how urgent it is for the region to grow domestic public and private funding in order to achieve NDC targets and innovative financial solutions that blend public and private investment (Mohan 2022a, b).

The study revealed large gaps in estimating the climate finance needs of the region. Five countries must still define their NDC financing needs while countries that provided estimates are yet to cost all projects, and targets are expected to become more ambitious and thus more costly over time. This suggests that once all Caribbean SIDS comprehensively cost their NDCs, the demand for finance to support mitigation and adaptation is likely to be significantly larger than the supply of funds from international climate sources. It is important that Caribbean island states clearly calculate and articulate their climate finance needs. They can adopt a strategy to better define their mitigation and adaptation cost requirements through more scientific, transparent and standardized methodologies. However, it is not uncommon for countries to not provide comprehensive cost information in their NDCs (Kissinger et al. 2019) given that there is no guidance on the inclusion of finance strategies and mitigation and adaptation cost estimates when countries prepare their climate plans (Pauw et al. 2018). The inclusion of such finance needs can however strengthen transparency and boost donor and investor confidence in making climate funds available and allow them to attract greater levels of scarce climate ODA (Pauw et al. 2018). The region has been making strides in this area given that eleven countries still had to define cost estimates in their intended NDCs (Mohan 2022a) with the figure now being five. Caribbean SIDS nonetheless require technical expertise and financial resources to undertake more detail, transparent and standardized mitigation and adaptation cost estimates.

This study finds that climate financing to Caribbean SIDS is heavily concentrated with larger least developed islands receiving the majority of funds. Just two countries—Haiti and the Dominican Republic—received half of total finance commitments

over 2015–2020. For the period 2010 to 2015, Atteridge et al. (2017) similarly found that larger poorer Caribbean countries received the majority of climate financing; Norway allocated US\$ 351 million to Guyana and France provided US\$ 420 million in loans to the Dominican Republic with these two relationships making up 52% of the total climate finance committed to the region. The Bahamas, Barbados, St. Kitts and Nevis and Trinidad and Tobago recorded no committed inflows of climate finance over the period 2015–2020. This suggests that larger poorer islands in the region are able to attract greater levels of international climate finance, while smaller high-income islands which are no less vulnerable to climate impacts and natural disasters receive less funds. It is important that smaller high-income islands access international climate finance given that natural disaster events can cause significant destruction and increase government debt (Mohan and Strobl 2021). For instance, in 2019, Hurricane Dorian struck the Bahamas as a category five hurricane and caused US\$ 3.4 billion in damages equivalent to one-quarter of the country's GDP (IDB 2019). Nonetheless, Robinson (2017) shows that the skewed nature of these allocations follows the same pattern as non-climate-specific aid to the region which typically goes to larger poorer countries.

The sectoral distribution of climate ODA is highly skewed. Just three sectors—energy; agriculture, forestry and fishing; and transport and storage—received over 50% of total allocations. This is not surprising given that these sectors are the largest greenhouse gas emitters in the region. The present sectoral distribution of climate finance has shifted from the 2010 to 2015 period. Atteridge et al. (2017) found that general environment protection received the largest share of climate finance primarily because of the finance provided by Norway to Guyana for forest protection activities followed by transport because of allocations made to the Dominican Republic and Haiti. Sector support in this more modern period is more evenly spread across countries. Other sectors that are important for building long-term resilience and pivotal to national development agendas are however somewhat less targeted as recipients of climate finance, namely general environment protection, disaster prevention and preparedness, reconstruction, relief and rehabilitation, education and health. A comparable trend holds for the 2010–2015 period apart from general environment protection (Atteridge et al. 2017). This suggests that the climate investment priorities articulated by Caribbean SIDS can be better aligned with domestic development priorities through fiscal budgets and environmental tax reform to build long-term resilience.

The source of climate ODA in the region is also highly skewed. Bilateral partners make up 67% of total international climate finance commitments over the period 2015–2020 followed by multilateral sources with 27%. Atteridge et al. (2017) found a similar pattern for the period 2010–2015 and stated that this may be because of higher transaction costs associated with accessing finance from climate funds compared to bilateral partners and because some funds, such as the GCF, are relatively new and only began project approvals at the end of 2015. The UN (2021) climate finance report states that accessing multilateral funds is complex, and because of capacity constraints, SIDS find it difficult to develop implementation strategies. Also, multilateral funders are sometimes unwilling to support small-scale climate projects because of high transaction costs and time constraints (UN 2021). Furthermore,

Robinson (2017) states that SIDS prefer bilateral sources of climate financing because of high administrative burdens associated with multilateral funding. Kalaidjian and Robinson (2022) also show that the funding SIDS receive from multilateral climate funds are insufficient to achieve climate objectives and that these funds suffer from widespread administrative issues creating barriers to access. Nonetheless, it is likely that the share of multilateral finance will increase in the future as more projects are approved and SIDS build capacity in applying to these funds.

The bulk of climate funding to Caribbean SIDS comes from grants (66%) versus loans (34%). Climate finance in the form of loans for the Caribbean is however higher than the average climate loan finance for SIDS as a whole at 20% (Watson and Schalteck 2019). It is important that the region continues to access climate finance through grants given that the region is heavily in debt and frequently hit by disasters (Mohan and Strobl 2021). The high-income status of the majority of Caribbean SIDS however presents a challenge in accessing grants and concessionary finance and SIDS globally have called for a change in the criterion from income to vulnerability for allocating concessionary support to their countries (UN 2021).

6 Conclusion

The findings from this paper suggest that the Caribbean should consider new and innovative domestic public and private sources of climate finance in order to meet NDC goals since the reliance on international climate finance leaves a substantial financing gap. In addition, Caribbean SIDS can better align their development agendas and climate action to build long-term resilience through their fiscal budgets and environmental tax reform. In order to close this financing gap, the region can also better attract international climate finance particularly from multilateral sources through more detailed, standardized, transparent and scientific mitigation and adaptation estimates. Caribbean SIDS could be more successful at accessing finance from multilateral climate funds if they develop the right expertise to produce high-quality climate projects and comprehensive implementation strategies. The findings of the study also have implications for negotiations in the UNFCCC to mobilize increased financial flows to Caribbean SIDS. SIDS have historically played a pivotal role in raising awareness of climate change on the international stage and advocating for climate action and making access to finance available. Given the significant shortfall in international climate finance to meet the financial needs of the region, it is imperative that these countries push for developed countries to fulfil their target of making available US\$ 100 billion in climate finance that is in fact new and additional. Moreover, even if donors meet their commitments, the high-income status of Caribbean SIDS means that they are lower priority for the allocation of scarce international funds. It is therefore important for the region to lobby for a change from income to vulnerability as the primary criterion for accessing concessionary finance as higher income SIDS which are no less vulnerable to natural disasters and climate impacts may be at a disadvantage in accessing international climate finance.

Appendix

Table 8 Principal climate finance commitments, US\$ billion (2015–2020)

Country	Mitigation	Adaptation	Total
Antigua and Barbuda	0.03	0.023	0.053
The Bahamas	0	0	0
Barbados	0	0	0
Belize	0.02	0.002	0.022
Cuba	0.062	0.056	0.118
Dominica	0.019	0.007	0.026
Dominican Republic	0.071	0.114	0.185
Grenada	0.002	0.011	0.013
Guyana	0.034	0.035	0.069
Haiti	0.152	0.321	0.473
Jamaica	0.015	0.053	0.068
St. Kitts and Nevis	0	0	0
St. Lucia	0.015	0.019	0.034
St. Vincent and the Grenadines	0.019	0.009	0.028
Suriname	0.009	0.03	0.039
Trinidad and Tobago	0	0	0
Regional	0.118	0.25	0.368
Total	0.566	0.931	1.497

Source: author's compilation based on OECD DAC CRS

Table 9 Significant climate finance commitments, US\$ billion (2015–2020)

Country	Mitigation	Adaptation	Total
Antigua and Barbuda	0.007	0.026	0.033
The Bahamas	0	0	0
Barbados	0	0	0
Belize	0.016	0.037	0.053
Cuba	0.068	0.115	0.183
Dominica	0.005	0.018	0.023
Dominican Republic	0.147	0.044	0.191
Grenada	0.006	0.055	0.061
Guyana	0.051	0.012	0.063
Haiti	0.357	0.491	0.848
Jamaica	0.089	0.015	0.104
St. Kitts and Nevis	0	0	0
St. Lucia	0.004	0.006	0.01
St. Vincent and the Grenadines	0.001	0.116	0.117
Suriname	0.012	0.021	0.033
Trinidad and Tobago	0	0	0
Regional	0.42	0.423	0.843
Total	1.182	1.381	2.563

Source: author's compilation based on OECD DAC CRS

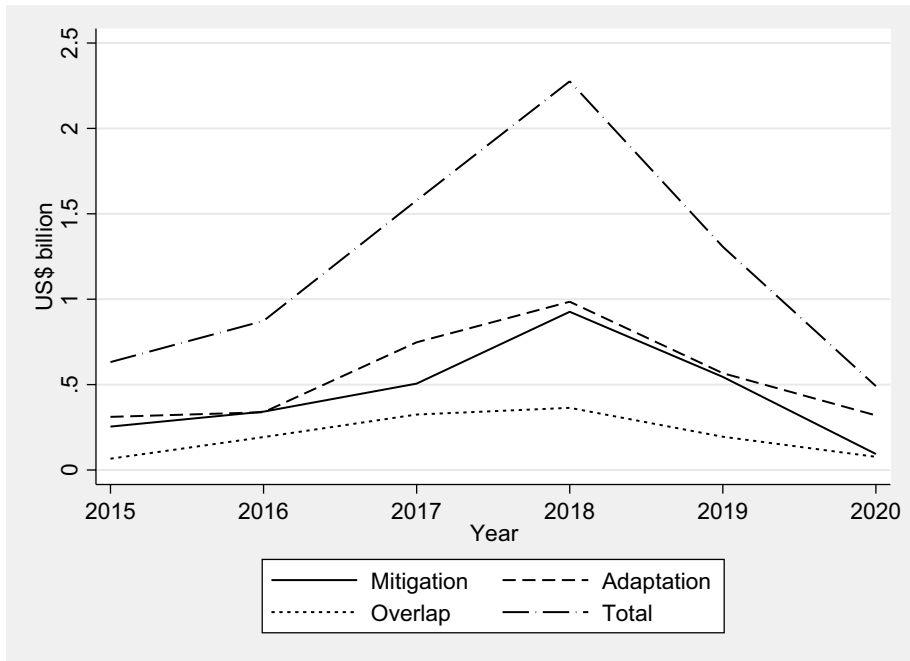


Fig. 1 Annual climate-related finance commitments, US\$ billion (2015–2020). Source: author's compilation based on OECD DAC's Creditor Reporting System

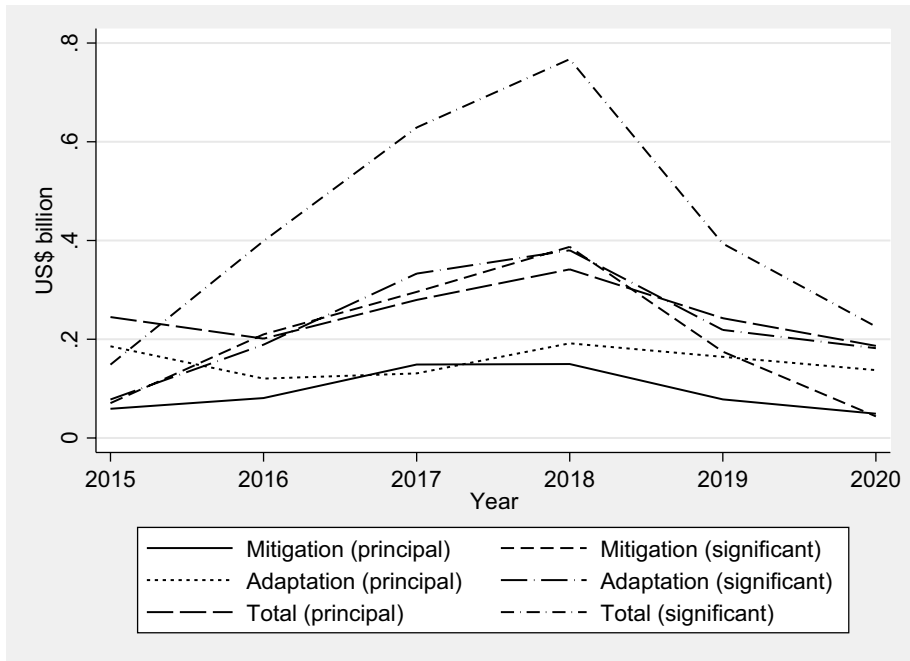


Fig. 2 Annual climate-related finance commitments principal versus significant, US\$ billion (2015–2020). Source: author's compilation based on OECD DAC's Creditor Reporting System

Data availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest The authors declare no competing interests.

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