

March 2021

The coronavirus disease (COVID-19) pandemic: an opportunity for a systemic approach to disaster risk for the Caribbean

Foreword by the Executive Secretary of the Economic Commission for Latin America and the Caribbean (ECLAC)

The COVID-19 pandemic is a disaster that combines a biological threat with various vulnerabilities, such as the organizational and response capacity of health systems, overcrowding, informality, social work practices, and public transport. Disasters of this origin are not unknown in Latin America and the Caribbean. Dengue and cholera have caused the most epidemics in the region in the last fifty years. However, unlike other threats such as earthquakes, hurricanes and floods, which last for minutes, days, or weeks, an epidemic can last for years. In 2020, COVID-19 affected all the countries in the region.

The human and economic impacts of the COVID-19 pandemic are unprecedented. According to World Health Organization (WHO) figures, by November 2020 it had caused more than 18 times more deaths than all the epidemics that took place in Latin America and the Caribbean between 1970 and 2019. Furthermore, these deaths account for 63% of all those caused by disasters in the region in the same period. For the first time since records began, all the countries of the region have seen their economies contract at the same time, destroying jobs and driving up poverty and inequality. The COVID-19 pandemic has exposed the cracks in the existing development pattern, and revealed its limitations, around the world, but particularly in Latin America and the Caribbean.

The pandemic has hit at a time when a development model with serious structural flaws has been the norm: growing inequality, high labour informality, weak and fragmented institutions—especially those related to social protection—and production and business structures with limited technological capabilities that are concentrated in sectors which depend on static comparative advantages, such as natural resources and low wages.



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Governments have taken health, social and economic measures to address the emergency and reduce the impact of the crisis on the most vulnerable. Most of the countries in the region have made notable efforts, considering their reduced fiscal space. However, in addition to short-term relief, there must be a response to structural problems. The goal cannot be to reinstate the previous development pattern, but to move towards a new one. After the emergency has passed, a renewed commitment is needed, to move towards the Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development, the central principles of which are increasingly relevant: the need for a sustainable development model and the interdependence of its social, environmental and economic dimensions. The disaster of the COVID-19 pandemic shows how rapidly the region can lose recent critical social and economic gains.

The response to COVID-19 has not been comprehensive or coordinated. A new international framework could have contributed to bold policy actions that went beyond the orthodoxy that this situation has demolished. I want to end these brief introductory words by looking further into the future, as we will face similar challenges again and again. I am convinced that this situation underscores the need for disaster risk management to be incorporated into national planning, as a way to guarantee a comprehensive response to disasters. At the global and regional levels, it is crucial that those of us who work in international organizations promote and support a new development model and a global framework that can provide a coordinated and adequate response to the next pandemic.

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Foreword by the Special Representative of the Secretary-General for Disaster Risk Reduction

The COVID-19 pandemic goes beyond almost anything experienced in living memory. Long-standing norms have been upended. The way we work, trade, travel, study and socialize has been transformed beyond recognition, perhaps forever.

The nature of our globally interconnected world means shocks, stresses and crises reverberate globally and are exacerbated by the interaction between climate change, ecosystem fragility, pre-existing inequality, and political or financial instability. COVID-19 is a vivid example of systemic compound risk. It shows us that the very nature and scale of risk has changed to such a degree that it has the potential to overwhelm established risk management approaches and the reach of institutions.

The Caribbean is no exception. As well as having to respond to the pandemic, it has experienced a very active hurricane season, testing its capacity to handle multiple hazards at the same time. The global health crisis is affecting sectors that are critical for generating income and employment, such as tourism, and has revealed the precarious nature of the systems upon which trade, food, energy, transportation, and social safety nets depend.

Now is the time for multi-stakeholder dialogue and action to understand and manage systemic risk. Progress towards risk-informed sustainable development will only be accelerated by incorporating systems-based approaches into the design of policies and investments across all sectors and regions, and at all levels.

It is in this spirit that the United Nations Office for Disaster Risk Reduction (UNDRR) has prepared this report together with ECLAC, to provide an overview of how the Caribbean is addressing the pandemic, notably in terms of its economies and disaster risk reduction governance mechanisms. The document outlines policy recommendations to assess multiple systemic failures and prevent them reappearing while understanding the challenges and opportunities for a risk-informed recovery in the present.

This report is an urgent call to strengthen regional integration and cooperation for effective regional governance for disaster risk reduction and socio-economic recovery. Many disasters can be avoided or prevented if there are funded strategies in place to manage and reduce existing levels of risk and prevent creation of new risks. These strategies need to not only integrate different government sectors but also different levels of government and multiple actors.

The required transformation is possible. It demands from all of us much greater ambition, and action that is on a par with the magnitude of the threat.

Mami Mizutori

Special Representative of the Secretary-General
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Introduction¹

- The large-scale and long-lasting effects of coronavirus disease (COVID-19), combined with the possible impact of other hazards and recent events, have the potential to damage or destroy vital infrastructure and the life support systems of large parts of societies and economies. The COVID-19 pandemic will also have a historic socioeconomic effect on Latin America and the Caribbean. The Caribbean² and especially its economic activity have been hit by external shocks, accompanied by a global recession and a collapse in international trade. This is expected to be reflected directly in higher unemployment and greater poverty and inequality, two major and historical drivers of vulnerability in the region.
- The increasingly complex interactions between economic, political and human systems on one hand and environmental systems on the other contribute to the systemic nature of risk and its cascading effects. Today's environmental, health, food, energy, information, financial and communication systems and supply chains are complex, interconnected, and vulnerable. Their vulnerabilities also appear and exist at multiple levels, from the local to the global. These systems are tested by and drive disruptive factors such as infectious diseases, depletion of natural resources, environmental and ecosystem degradation, food shortages, social unrest, political and financial instability, and inequality.
- These disruptive elements shape the risk scenarios the Caribbean faces. The COVID-19 pandemic has exposed the absence of significant efforts by countries and cities around the world to overcome the limitations of a hazard-by-hazard, siloed and fragmented view of risk management. It has demonstrated, that in an ever more populous, networked and globalized society, the very nature and scale of risks have changed, to such a degree that they overwhelm established risk management institutions and approaches (UNDRR, 2019). A systemic approach to risk management must guide action in the short, medium and long term.
- Disaster risk can be understood as a function of hazard, exposure, and vulnerability. The wording of the Sendai Framework for Disaster Risk Reduction 2015–2030 emphasized the systemic nature of risk and it proved prescient. The global COVID-19 disaster has revealed the precarious systems upon which trade, food, energy, transportation, and social safety nets depend. Risks manifests with local, regional and global cascading consequences and can trigger feedback loops that reverberate across communities, sectors, geographies and scales (UNDRR, 2019). The pandemic has affected the social, economic and physical environments, as well as the very same systems that created the right conditions for this virus to emerge, propagate and become a global catastrophe.
- The COVID-19 pandemic demonstrates the urgent need for new conceptual and analytical approaches to improve understanding and management of risk dynamics and complex, interconnected risk drivers with cascading effects. Progress will only be accelerated towards risk-informed sustainable development and regeneration by strengthening the understanding of system risk and incorporating systems-based approaches in the design of policies and investments across all sectors, geographies and scales. Improved risk governance is essential. There is an opportunity to build on progress to date.
- The United Nations blueprint for reducing disaster risk, the Sendai Framework for Disaster Risk Reduction 2015–2030, adopted by Member States in 2015, is a common and agreed tool to better prevent, mitigate, prepare for and respond to all risks, including systemic risks and biorisks. If we do not act now on reducing disaster risk, we are accelerating the wilful destruction of our planet. The response to this pandemic must accelerate rather than undermine decarbonization, protect natural capital, build resilient cities and ensure social equality and inclusion. Risk and recovery from disasters cannot be addressed without aiming to protect people and the planet, preserving gains across all the Sustainable Development Goals (SDGs) and placing the voices, rights and agency of people at the heart of any efforts.

¹ Unless otherwise indicated, the cut-off date for the information used to prepare this report is 30 November 2020.

² The definition of the Caribbean subregion used in this publication is the insular Caribbean. This decision was taken to reflect the common natural hazard threats shared by those countries. The group includes Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago. Whenever the Caribbean is mentioned in this report, it refers to these countries.

- A return to normal is therefore a return to those same mutually reinforcing conditions that gave rise to the pandemic emergency in the first place. Resuming business as usual —rebuilding the same systems— will generate more risks, yielding similar outcomes. Framed correctly, the actions that governments choose can transform the sectors they seek to save. The urgency is evident, and the opportunity is there. We have observed governments wresting back and wielding power in many countries, in a historic fashion, the likes of which have not been seen in decades.
- The required transformation is possible. It demands much greater ambition, and action that is on a par with the scale of the threat. Not what is convenient, but what is necessary.

I. Socioeconomic effects of COVID-19 on the Caribbean

A. The Caribbean economies before COVID-19

- Before COVID-19, the economies of the Caribbean countries were characterized by slow economic growth, high indebtedness, significant vulnerability to different hazards —notably natural hazards— and dependence on tourism and food imports.
- At the end of 2019, ECLAC warned, in a context of a slow economic growth in the world, that the main economic policy challenge was preventing Latin America and the Caribbean “from falling into economic and social stagnation, while maintaining progress on macrofinancial stability and debt sustainability” (ECLAC, 2019). The report also noted that 23 of the 33 countries of the region had recorded slower growth than in 2018.
- In November 2019, ECLAC forecast that Latin America and the Caribbean would grow by a maximum of 1.3% in 2020. By subregions, the Caribbean was projected to grow by 2.3%, Central America by 2.5%, and South America by 1.1% (table 1). If the projected growth for the region had been confirmed, the seven years from 2014 to 2020 would have been the slowest period of economic growth in Latin America and the Caribbean in 40 years. With this expected performance of the thirteen Caribbean economies, five would have had growth of over 3%, and Antigua and Barbuda would have had the fastest growth, at 6.5%. Under the World Bank country classifications by income level, Caribbean countries ranked in the middle-income, upper-middle-income and high-income economies, the exception being Haiti. In the 2010s, which started after the global financial crisis, the average economic growth of the Caribbean did not keep pace with other developing countries, including small island developing States (SIDS) (ECLAC, 2018).

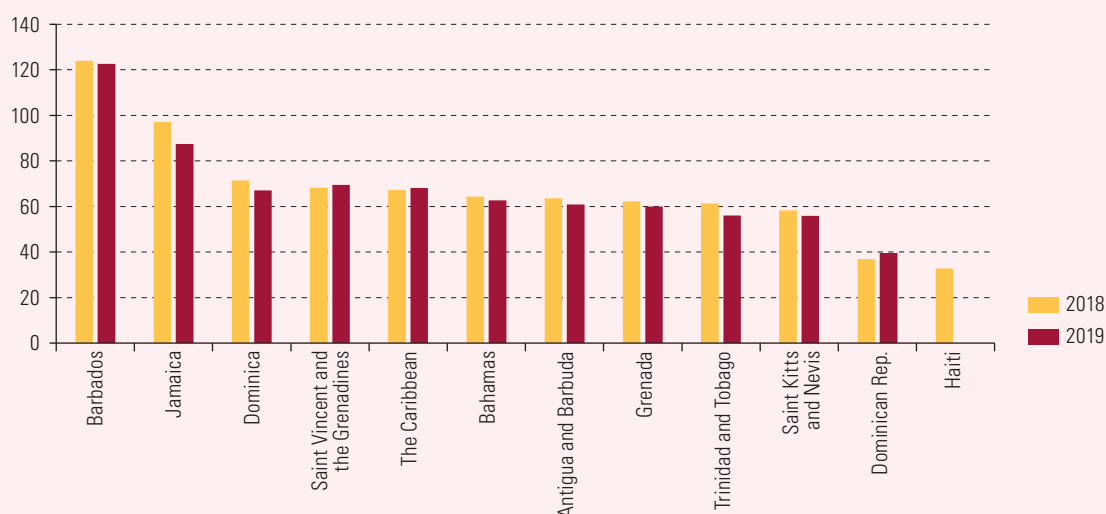
Table 1 | The Caribbean (13 countries) and other subregions of Latin America and the Caribbean: GDP growth, 2019 and projections for 2020
(Percentages)

	2019	2020 projections in November 2019, pre-COVID-19	2020 projections in December 2020, including COVID-19 effects
Antigua and Barbuda	6.2	6.5	-18.3
Bahamas	0.9	-0.6	-14.5
Barbados	0	1.3	-16.0
Cuba	0.5	0.5	-8.5
Dominica	9	4.9	-15.4
Grenada	3.3	4	-12.4
Haiti	-0.7	0.3	-3.0
Jamaica	1.7	1.6	-9.0
Dominican Republic	4.8	4.7	-5.5
Saint Kitts y Nevis	3	3.5	-15.1
Saint Vincent and the Grenadines	2.5	2.4	-6.3
Saint Lucia	2	3.2	-26.6
Trinidad and Tobago	0.6	1.9	-6.8
The Caribbean	2.1	2.3	-6.7
Central America	2.3	2.5	-6.2
South America	-0.1	1.1	-7.3
Latin America	0.1	1.3	-7.7
Latin America and the Caribbean	0.1	1.3	-7.9

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

- Prior to the pandemic, unemployment rates had begun to decline in some Caribbean countries. The reductions in unemployment in Jamaica and Grenada were particularly notable, as they were from historically high rates, (ECLAC, 2020e). One characteristic of Caribbean labour markets is a high unemployment rate for youth (ECLAC, 2018).
- Prior to COVID-19, the Caribbean countries had limited fiscal space. As shown in figure 1, their average debt-to-GDP ratio was 68.2% in 2019, up 0.9 percentage points on the previous year (ECLAC, 2020d). In contrast, the gross debt of the central governments of South America and Central America averaged 50.2% and 50.3% of GDP, respectively, 1.7 and 2.2 percentage points higher than in 2018. Caribbean economies have the highest debt ratios in the world. ECLAC has argued that policy missteps and fiscal profligacy—a common cliché—have not necessarily been the root causes of debt accumulation in the subregion, but rather the impacts of negative external economic shocks, extreme events and climate change challenges (ECLAC, 2018).

Figure 1 | The Caribbean (11 countries): debt-to-GDP ratios, 2018–2019
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

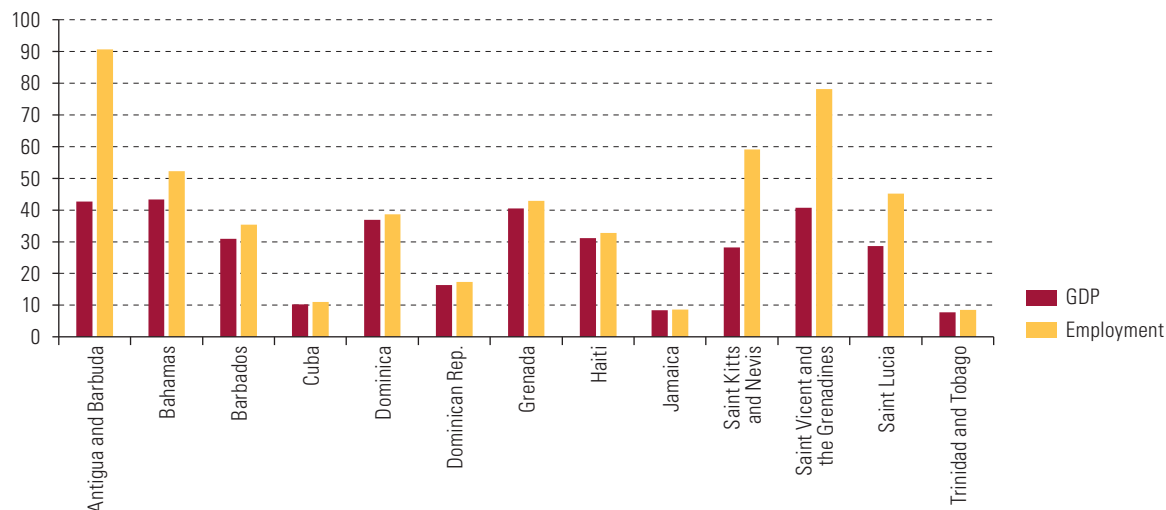
- High indebtedness has translated into high debt service that consumes a significant part of tax revenue. In the 2009–2018 period, average debt service as a percentage of government income exceeded 40% in three countries in the Caribbean: Antigua and Barbuda, Barbados and Jamaica. In the case of Jamaica, the average ratio was extreme, at 68%. In the Bahamas, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines this indicator was between 20% and 40% (Bárcena, 2020a).
- This fiscal situation meant that the countries had very little room to compensate for any negative shocks such as disasters, which are recurrent in the Caribbean. As will be examined in more detail in chapter II, the frequency of natural hazards and the concentration of the population on the coast makes the Caribbean one of the regions that is hit hardest by disasters. Between 1970 and 2019, 409 disasters triggered by natural hazards were recorded in the 13 Caribbean countries, and 110 disasters with technological origins. The disasters triggered by natural hazards alone killed 243,740, affected 53.7 million and caused total damage of US\$ 67.5 billion³. Of these disasters, 62.7% took place in Cuba, the Dominican Republic and Haiti and 92% originated from meteorological, hydrological or climatic phenomena, such as droughts, floods, storms and tropical cyclones (for more details see chapter 2). One of the particular characteristics of the Caribbean is that disasters can have national and relative magnitudes that exceed those seen in Central America and South America. Even compared to other groups of SIDS, Caribbean SIDS have been relatively more affected by disasters (Bello and De Meira, 2019).
- Caribbean countries are highly dependent on tourism. According to data from the World Travel and Tourism Council (WTTC),⁴ [the Caribbean is the region of the world where the tourism sector accounts for the highest share of GDP and employment. Antigua and Barbuda, the Bahamas,

³ The damage figure is in constant dollars at 2019 prices. The source of this information is CRED (2020).

⁴ See [online] <https://wttc.org/Research/Economic-Impact/Data-Gateway>.

Grenada and Saint Vincent and the Grenadines are the group of Caribbean countries with the highest contributions of tourism to GDP, at over 40%. At the other extreme, there are countries where the tourism sector’s contribution to GDP is less than 11%, such as Cuba, Haiti and Trinidad and Tobago, a level similar to some countries in Central and South America. Caribbean employment is highly dependent on tourism; in 8 of the 13 analysed countries more than 30% of total employment comes from tourism and in 4 countries more than 50%, as in the cases of Antigua and Barbuda, (90.7%), Saint Lucia, (78.1%), Saint Kitts and Nevis (59.1%), and the Bahamas (52.2%). Tourists visiting the Caribbean come mainly, in order of importance, from the United States, Canada and Europe. Except for Cuba and Dominica, the percentage of visitors from the United States is between 78% and 30% of the total.

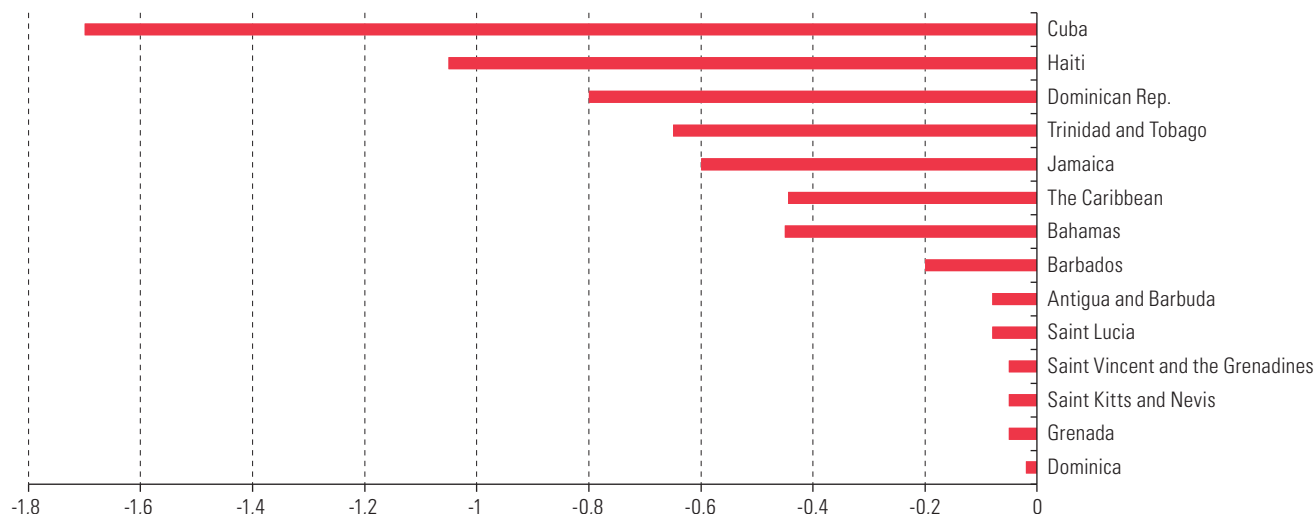
Figure 2 | The Caribbean (13 countries): tourism sector contribution to GDP and employment, 2019
(Percentages)



Source: World Travel and Tourism Council (WTTC).

- As shown in figure 3, all Caribbean countries are net food importers, which is to say that agricultural imports outweigh agricultural exports. The greatest vulnerability exists when a net food importer allocates a high proportion of exports to finance food imports, and its agricultural exports are low compared to total exports (ECLAC/FAO, 2020).

Figure 3 | The Caribbean (13 countries): food trade balance
(Percentages of GDP)



Source: Food and Agriculture Organization of the United Nations (FAO), Corporate Database for Substantive Statistical Data (FAOSTAT) [online] <http://www.fao.org/faostat/en/>.

- The vulnerability in terms of food is even greater in low-income countries with high levels of malnutrition, such as Haiti. In most countries in the subregion, the risk to food security lies in the disruption of food supply chains. Another factor that increases the food vulnerability of these Caribbean countries is that there is no diversification of the markets where imports come from. Therefore, a disruption of food supply chains increases the risk of food insecurity.
- The English-speaking Caribbean has a high prevalence of non-communicable diseases, with 70% of all deaths of over-60s attributable to these diseases. In fact, mortality in the subregion from non-communicable diseases is the highest in the Americas. Heart attacks, strokes and diabetes cause most premature deaths, and hypertension is the leading risk factor. Diabetes prevalence in the subregion is also twice the global average. The major non-communicable diseases in the Caribbean share common underlying risk factors, namely unhealthy eating habits, physical inactivity, obesity, tobacco and alcohol use and inadequate use of preventive health services (Jones, 2016).

B. The impact of the COVID-19 pandemic

- The health crisis caused by the COVID-19 pandemic has also produced the worst economic and social upheaval in recent decades around the world and in the economies of Latin America and the Caribbean. According to ECLAC projections, as a result of the pandemic the economies of Latin America and the Caribbean will contract by 7.9%, with a 7.1% drop in regional per capita GDP, marking a reversal of almost 10 years' growth, to a level similar to that recorded in 2010 (ECLAC, 2021). The economies of the Caribbean countries will fall on average by 6.2%.⁵ The contractions in Caribbean countries' economies are expected to range from 5% in Haiti to 12.3% in Antigua and Barbuda. There are seven countries for which GDP is projected to decline by at least 8% (table 1). It will take at least three years, longer than previously expected, for economic activity to return to pre-pandemic levels, and the recovery will be slower than in the 2008 subprime crisis (Bárcena, 2020c).
- In terms of sectors, the largest impact is being felt in services, such as tourism, aviation, lodging, restaurants, entertainment and commerce, with the exception of supermarkets, pharmacies and other services declared essential by each country. Non-essential product industries also face problems arising from lockdown measures requiring the suspension of their activities. Businesses' income has declined significantly, making access to credit difficult and in many cases leading to definitive closure. In some countries, construction has also been hit hard by stoppages and the great uncertainty surrounding new projects.
- The economic shock is expected to cause a greater income inequality in all the countries of Latin America and the Caribbean. In the Caribbean, given the limited availability of data, ECLAC was only able to estimate the impact of COVID-19 on poverty and income distribution in the Dominican Republic. For 2020, it is forecast that poverty will rise by 4.4 percentage points in the country, extreme poverty will increase 2.2 percentage points, and the Gini index will climb by between 3% and 3.9% (ECLAC, 2020c).⁶ In addition to income inequality, COVID-19 has exacerbated other vulnerabilities and inequalities in Caribbean society, including access to information and communications technologies (ICT); access to education services; food insecurity; and vulnerability of women and girls, with a significant increase in gender-based violence. Furthermore, governments face the tremendous challenge, despite being burdened by high levels of public debt and debt servicing, of providing support to flagging businesses and welfare to increasing numbers of unemployed, particularly those in the informal sector (ECLAC, 2020e).
- If ECLAC growth forecasts are correct, even in the absence of new debt, the Caribbean's average debt-to-GDP ratio will increase to 74.6% in 2020. However, this is a conservative estimate, as it was made without considering new debt. Some countries could find themselves in unsustainable debt situations, for exogenous reasons. In chapter 3, a proposal is made to address this issue.
- COVID-19 and cascading effects are affecting Latin America and the Caribbean through external transmission channels (ECLAC, 2020a):

⁵ The most affected subregion is forecast to be South America, with a 7.3% fall. The least affected region is expected to be Central America, with an average decline of 6.2%. Since the definition used for the Caribbean in this document is the insular Caribbean, the definitions of South and Central America for the purpose of these estimates are geographical. South America includes Guyana and Suriname and Central America includes Belize.

⁶ These estimates are indicative since they only consider the labour market consequences of the pandemic and the associated loss of income, and do not account for changes in households' non-labour income. There could be further declines in some resources, for example, in migrant remittances. Moreover, the projections do not take into account the measures adopted by the subregion's governments to transfer resources to households. It is hoped that these measures will mitigate the impact of the pandemic on living conditions, particularly for the most vulnerable households.

(i) A decline in the economic activity of the region's main trading partners and the cascading effects of this. In 2020, the world economy is expected to contract by 5.2%. Advanced economies are projected to shrink by 7%, led by projected falls of 6.5% in the United States, 6.1% in Japan and 8.7% in the eurozone. Overall, emerging and developing economies are projected to contract by 1.6%, although China is expected to grow by 1%.⁷ These projections have been made in a situation dominated by issues such as the length of the pandemic and required lockdowns; voluntary physical distancing, which will affect spending; the impact of changes to strengthen workplace safety which increase business costs; global supply chain reconfigurations that affect productivity as companies try to enhance their resilience to supply disruptions (IMF, 2020).

The downturns in economies around the world have been simultaneous, and 90% of countries and continental averages are expected to record negative growth rates. It looks set to be the worst recession in the global economy since the Second World War. Global trade will also contract sharply in 2020, reflecting considerably weaker demand for goods and services that are critical for the Caribbean, such as tourism.

(ii) A decline in remittances. The eurozone and the United States are the main destinations for migrants from Latin America and the Caribbean. Given the decline in economic activity, the eurozone is projected to see an increase in the unemployment rate from 7.6% in 2019 to 9.8% in 2020, while for the United States the forecast is of a jump from 3.9% to 9.3%. Remittance flows are thus expected to decrease. The Caribbean countries most affected by this will be Haiti, where remittances account for 33% of GDP, Jamaica, where they represent 16%, and Saint Vincent and the Grenadines, Dominica and the Dominican Republic, where remittances represent between 5% and 10% of GDP.

(iii) A drop in commodity prices. The Caribbean countries benefit from falls in agricultural commodity prices. They would also benefit from declines in energy prices (except Trinidad and Tobago). As a result, this channel will help most of the countries of the subregion to absorb the shocks they are experiencing through other channels. In the first half of 2020, energy product prices were hit hardest by the decline in demand due to weaker global economic activity and the competition on oil prices between the Russian Federation and Saudi Arabia in the first quarter of the year. On average, prices in this product category are projected to be 30% lower in 2020 compared to 2019, and this is expected to hurt the economy of Trinidad and Tobago (ECLAC, 2020g).

(iv) Lower demand for tourism services. As previously mentioned, the economies of the Caribbean are largely based on tourism. Tourist activity could take several years to return to 2019 levels. In the short term, there will be a recovery as borders open, but flows will be much lower than before COVID-19, owing to the recession in the United States, Canada and Europe, which are the main sources of tourists for the Caribbean. There will also be a fear of potential infection during the trip, accompanied by uncertainty about hospital capacities in destination countries and about new border closures, all of which may lead tourists to postpone travel.

The magnitude and duration of the impact of these factors will to some extent be determined by how quickly vaccines are distributed and their effectiveness. Using the damage and loss assessment (DaLA) methodology, loss estimates were made until 2023, for two scenarios: (i) successful mass distribution of the vaccine in the first quarter of 2021; (ii) successful mass distribution of the vaccine by the second quarter of 2022. As in the DaLA methodology, the losses were estimated against a baseline, which is a counterfactual scenario, that is, the evolution that would have taken without COVID-19, (ECLAC, 2021).

By 2020, estimated losses would be US\$ 17.1 billion for the 13 Caribbean countries on this study. With respect to the income of the counterfactual scenario for 2020, the losses would be 75.5%. Losses in 2021 in scenario 1 would be US\$ 13.2 billion and in the other scenario US\$ 17.8 billion. By 2022 the losses in scenario 1 would be US\$ 4.1 billion and in scenario 2 US\$ 9.2 billion. In the first two months of 2023 the losses would be US\$ 327 million and US\$ 720 million respectively. In total losses for the Caribbean countries included in this report through February 2023 would be US\$ 34.7 billion for scenario 1, and US\$ 44.9 billion for scenario 2 (ECLAC, 2021).⁸

⁷ These projections are based on several data sources mentioned in ECLAC (2020c).

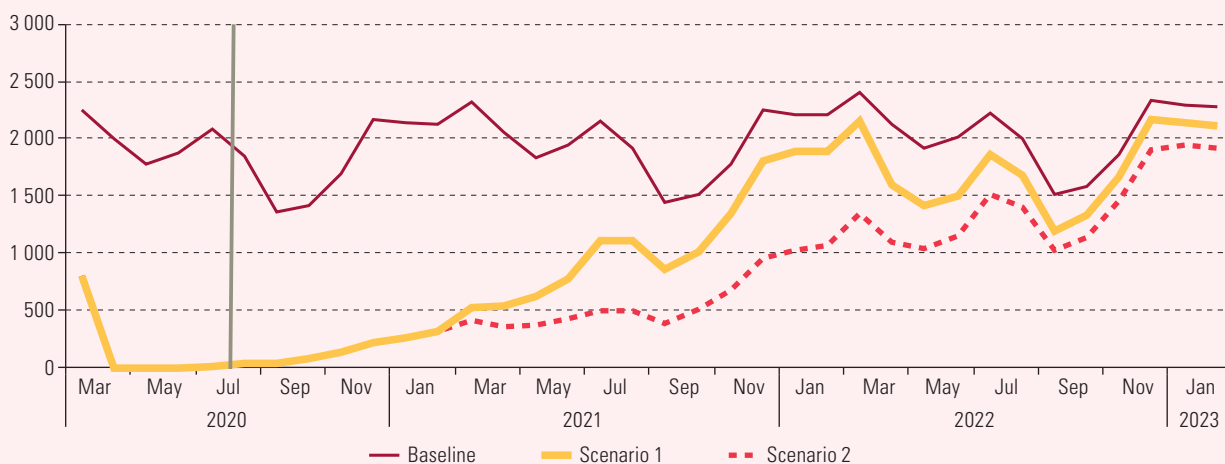
⁸ Including ECLAC associate member countries, in 2020, the estimated losses would be US\$ 26.5 billion. Losses in 2021 in scenario 1 would be US\$ 20 billion and in the other scenario US\$ 27 billion. By 2022, the losses in scenario 1 would be US\$ 6.1 billion, in scenario 2, US\$ 14 billion. In the first two months of 2023, the losses would be US\$ 488 million and US\$ 1.1 billion, respectively. In total, the losses for the entire Caribbean until February 2023 would be US\$ 53 billion for scenario 1 and US\$ 68.4 billion for scenario 2.

In short, the effects on the tourism sector will be considerable and its recovery could take at least three years. The expected decline in the tourism sector will have a significant impact on employment in the Caribbean, with critical social consequences throughout the subregion (ECLAC, 2021).

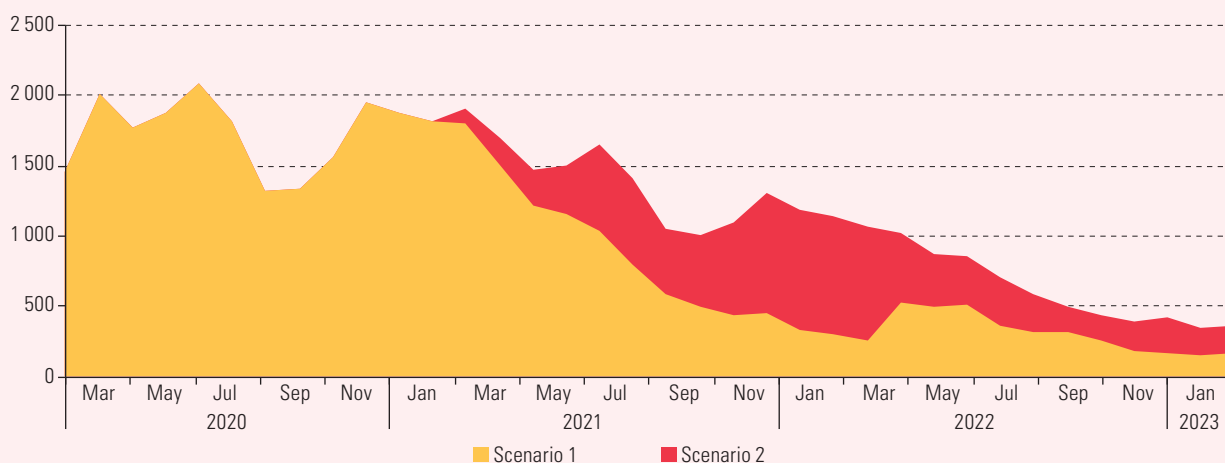
- (v) The interruption of global value and supply chains. According to the fifth ECLAC COVID-19 Special Report, the volume of global trade in goods could plunge by between 13% and 32% in 2020. The disruption of production in countries that participate in global value chains was a crucial contributing factor to the deterioration in trade in intermediate goods, compounded by a widespread weakening of demand for consumer and investment goods, as a result of lockdowns and the economic crisis.

Figure 4 | Caribbean countries: tourism losses
(Millions of dollars)

A. Gross income from tourism



B. Losses



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Table 2 | The Caribbean: tourism losses
(Millions of dollars)

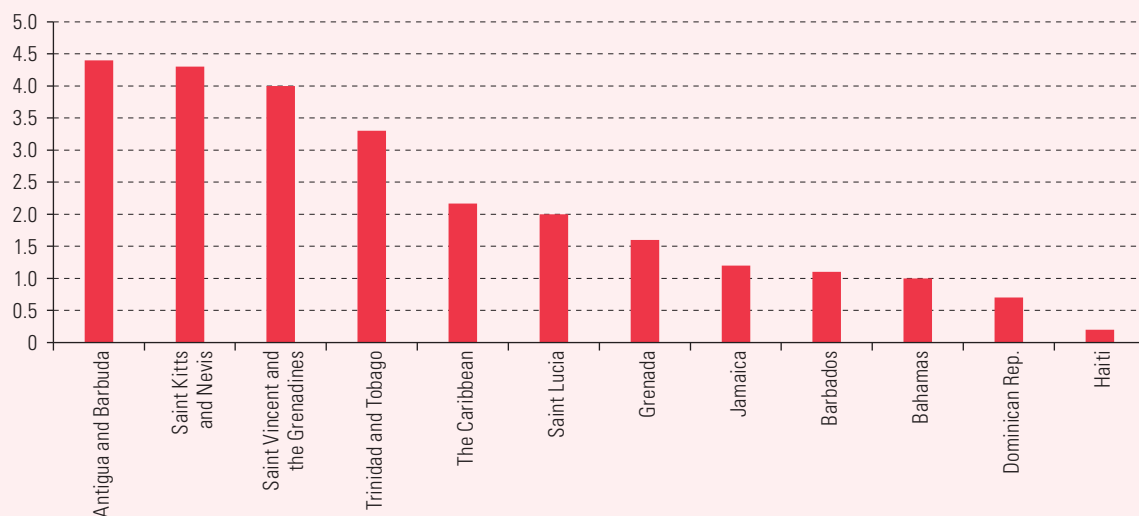
	Scenario 1	Scenario 2
2020	17 156	17 156
2021	13 160	17 783
2022	4 053	9 201
2023	327	720
Total	34 695	44 860

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

C. The short-run policy response: tackling cascading effects on the vulnerable population

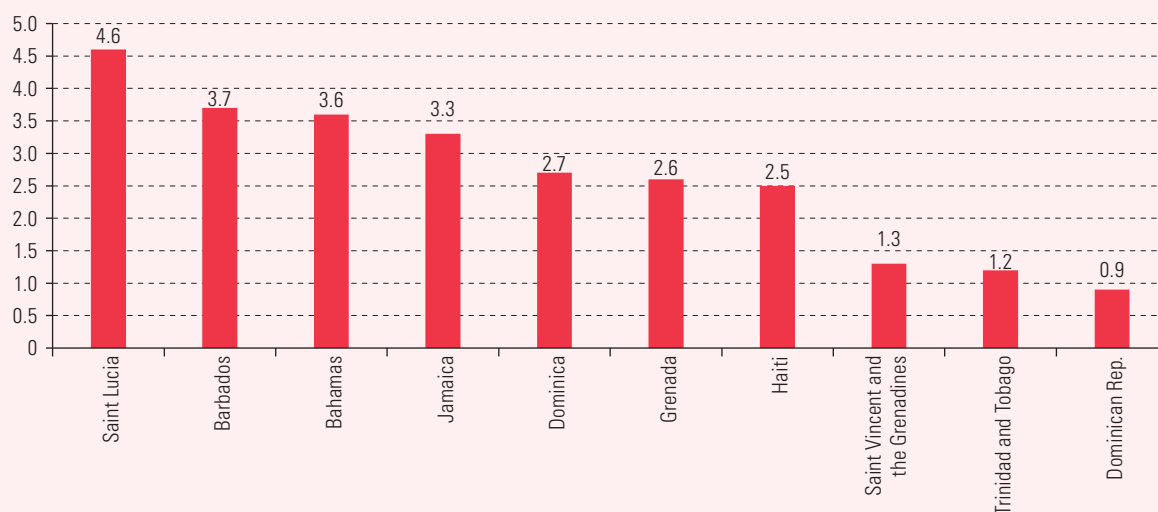
- The policy response of the countries of the Caribbean to COVID-19 has been constrained by limited fiscal space, caused by high indebtedness and debt service. Despite this restriction, they have increased spending and have granted credit and guaranteed support (Bárcena, 2020b).
- Some countries in the Caribbean have implemented support programmes for the productive sector. For example, Jamaica has introduced the Business Employee Support and Transfer of Cash (BEST Cash) programme and the COVID-19 Tourism Grant for businesses in the tourism sector. Similarly, Grenada has introduced a payroll support scheme for the tourism sector. In Grenada, additional credit is being made available to hoteliers and small businesses (ECLAC, 2020e).
- Barbados and Bahamas supplemented unemployment benefits that are part of their social security systems with temporary benefits for contributing persons and the self-employed. In Saint Kitts and Nevis, and, Saint Vincent and the Grenadines, the new temporary unemployment benefits provided through the social security system are restricted to insured workers only.
- Other countries have implemented emergency feeding programmes. The Government of Antigua and Barbuda has introduced the COVID-19 Emergency Food Assistance Programme, which is aimed specifically at older persons living alone, persons with disabilities, and unemployed persons with children. The Government of Trinidad and Tobago has boosted payments to current recipients of public assistance, including disability assistance grants. In addition, several countries have opted to replace school meals programmes with different modalities: for example, a food card in Trinidad and Tobago, and a weekly food kit in Antigua.
- There have also been support programmes for housing payments for workers who have experienced a loss of income owing to the pandemic and are at risk of repossession or eviction. Governments are working with financial institutions to prevent such occurrences. The Government of Trinidad and Tobago, for example, is providing a temporary rental assistance grant for individuals and families affected by furlough schemes or termination of employment. Reducing utility bills or allowing deferred payment of them are other relatively easy ways of relieving pressure on household budgets that have been adopted by some countries of the Caribbean (ECLAC, 2020e).
- Educational institutions across the Caribbean were forced to close as early as mid-March 2020 as part of measures to curb the spread of COVID-19. Mobile devices were provided for students without Internet connections to access online platforms, and activity packages are being provided at the primary and secondary levels (ECLAC, 2020e).
- Caribbean countries have increased health-care spending on testing for COVID-19, treatment of severe and critical cases, and enhanced public health surveillance. As shown in figure 5, the fiscal effort of countries has averaged 2.1% of GDP (ECLAC, 2020d). In Antigua and Barbuda, Saint Kitts and Nevis, Saint Vincent and the Grenadines, and Trinidad and Tobago the fiscal effort exceeded 3% of GDP. In addition, some countries have implemented credit support measures, to increase the availability of resources for lending, provide funds for guarantees and increase the flexibility of borrowing conditions. Of the countries that have used such measures, the Dominican Republic stands out, with an effort of 3% of GDP (ECLAC, 2020b). Trinidad and Tobago, Grenada and the Bahamas have all also taken this type of measure, for an equivalent of at least 0.5% of GDP.
- In this crisis, apart from Haiti, Caribbean countries have depended on funds from international financial institutions given that, because they are classified as upper middle- and high-income countries, they do not have access to alternative sources of financing, such as concessional external finance, or access to special trade treatments.
- In 2020, nine Caribbean countries have received financial support from international financial institutions to help contain the spread of COVID-19 and reactivate their economies (figure 6). In relative terms, this was much less than the financing extended to Central and South American countries, but it is also far lower than what is needed to overcome the financial gap caused by the crisis (ECLAC, 2020g). The International Monetary Fund (IMF) has supported eight of those Caribbean countries, the World Bank six, and the Inter-American Development Bank (IDB) three. In addition, the total amount of grants and donations to the subregion from the international community is estimated at just under US\$ 40 million. Grenada has received debt service suspension amounting to US\$ 1.5 million from the Paris Club. This represents eight months of principal payments from May to December 2020 (ECLAC, 2020e).

Figure 5 | The Caribbean (11 countries): fiscal effort
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Figure 6 | The Caribbean (10 countries): emergency financing from international financial institutions
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

- Because fiscal space has been reduced, on one hand by lower tax revenues owing to the fall in economic activity, and on the other by increased fiscal spending to support compensation policies, there will be cascading effects that drive up debt ratios, affecting credit ratings and the cost of borrowing. It is thus critical that international financial institutions implement policies to facilitate access to financial resources for Caribbean countries.
- Between the end of March and June 2020, there were several sovereign debt issues in Latin America and the Caribbean, confirming the favourable conditions for access to international markets. Trinidad and Tobago was the only country in the Caribbean that issued sovereign bonds, for a total of US\$ 500 million (ECLAC, 2020g). This debt was 3.3 times oversubscribed⁹ and its interest rate is 4.5%.

⁹ Oversubscription refers to the number of times the amount demanded in a debt issue exceeds the amount supplied.

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II. Towards a systemic approach to disaster risk in the Caribbean

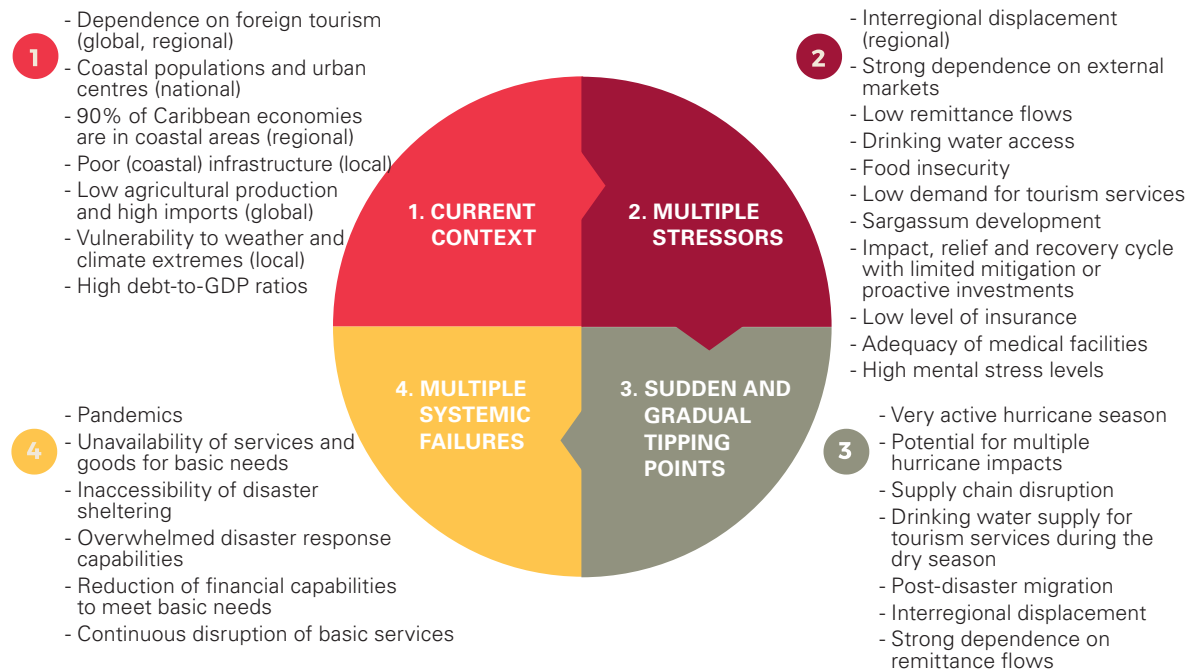
- The preamble to the 2030 Agenda states that SDGs are integrated and indivisible, balancing the three dimensions of sustainable development: economic, social and environmental. However, these dimensions are challenged this century by the emergence of large-scale dynamic risks that cut across them (UNDRR, 2019). The United Nations blueprint for reducing disaster risk, the Sendai Framework for Disaster Risk Reduction, adopted by Member States in 2015, is a common and agreed-upon tool to better prevent, mitigate, prepare for and respond to all risks, including systemic risks and biorisks. The COVID-19 pandemic could become a catalyst to transform the way in which society and our economic and political systems are structured and organized, promoting an approach to development that is risk-informed and resilience-focused, fostering prosperity within planetary boundaries, engineering sustainable and regenerative human activity that acknowledges its dependence on the finite resources of the natural environment. This is an unmissable opportunity.

A. COVID-19 and the systemic nature of risk

- In our populous, networked and globalized society, the very nature and scale of risk has changed to such a degree that it overwhelms established risk management institutions and approaches. Risk is increasingly systemic, with complex interactions between human, social, political and economic systems, and natural systems. The dynamic and interactive nature of the COVID-19 pandemic, of zoonotic origin, but globally networked in its spread, is an expression of the systemic nature of risk. Climate conditions, travel and trade, just-in-time manufacture and supply chains, urban density, lack of access to clean water and sanitation and other realities of living in conditions of poverty and conflict have combined with the inadequate risk management capacities of individuals and institutions to create the right conditions for an outbreak to become an epidemic, a pandemic and, ultimately, a global economic and social disaster (Mizutori and Hackmann, 2020).
- Even though a growing number of major infectious disease epidemics have emerged this century,¹⁰ mostly zoonotic, COVID-19 has shown that much more is required for appropriate and proportionate measures to be taken to prevent such global disasters, let alone respond effectively to them. Systems thinking and systems-based approaches are thus essential to the pursuit of the goals and targets of the 2030 Agenda. Disasters resulting from systemic risks may not fall into a traditional disaster taxonomy. The *Global Risk Assessment Report 2019* states that, by definition, systemic risks are emergent and not necessarily manifest using contemporary hazard-by-hazard approaches (UNDRR, 2019). Emergent risks are typically evident in retrospect, manifesting as a result of a series of events that cross human-imposed boundaries, whether institutional, geographic, disciplinary, conceptual or administrative.
- Furthermore, the pandemic demonstrates the extent to which a single hazard has the potential to trigger a multitude of cascading effects, impacting the life support systems of societies and economies worldwide at all levels (see diagram 1). In addition, many risks do not always occur in isolation but are combined, for example heat stress and drought, or flooding and landslides. Understanding the degree of cascading risk and developing ways to identify, manage or prevent systemic risk is an urgent challenge. Systemic approaches highlight interdependencies, connectivity across scale and geographies, and the potential for shifts in systems dynamics across scales. Such approaches identify particular features of systems (such as elements, drivers, levels) as targets for focused change, typically modulated by policy, recognizing the significant uncertainty and the propensity for non-linear responses resulting from cascading events and actions. This is particularly relevant for the Caribbean, since, as seen in chapter 1, the economic impact of the global disaster is more concerning than the public health impact.
- Epidemics are neither an isolated nor a recurring phenomenon in the Caribbean, they are part of its history. The basic constitution and mode of existence of the COVID-19 pandemic is different to a disaster associated with physical hazards. However, common underlying, causal root factors in the construction of different expressions of risk, the social and economic impacts (differentially affecting disadvantaged populations) and other common traits require an analysis from the perspective of disaster risk management (Lavell and Lavell, 2020).

¹⁰ For example, severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), influenza A (H1N1), avian influenza A (H5N1), and Ebola.

Diagram 1 | COVID-19 in a systemic risk scenario in the Caribbean



Source: United Nations Office for Disaster Risk Reduction (UNDRR).

- The first case of COVID-19 among the 13 analysed countries was confirmed in Jamaica on 10 March 2020. Since the start of the pandemic, the growth rates of national outbreaks in the subregion have been low, with the exception of a few countries. This transmission profile compares favourably to South America and Central America. The Dominican Republic has had the most COVID-19 cases in the subregion, but in general, Caribbean countries are suffering primarily from the cascading effects of the health crisis elsewhere in the world on areas such as global trade, tourism and transportations. Nonetheless, the high indebtedness, economic fragility, social vulnerability and exposure to climatic shocks of the Caribbean warrant risk-informed recovery policies and plans that integrate a systemic understanding of risk and its drivers.
- The social and economic impacts of the pandemic are exacerbating the existing vulnerabilities of these countries, as well as the underlying risk factors, such as poverty, inequality and informality. These risk factors could be compounded by future disasters caused by different hazards, many of which are recurrent in the Caribbean. The heightened exposure and vulnerability of different segments of the population requires special attention, as well as the institutional arrangements and the capacities needed to effectively respond to multiple hazards with systemic impacts.

B. Multiple-hazard exposure

- Hazards do not occur in a vacuum. More often than not, they happen alongside or immediately after one another. Biological hazards are no exception, and can also occur simultaneously with other hazards, including extreme and slow-onset events caused by climate variability and change, thereby intensifying the risks people and governments face (UNDRR, 2020).
- The Caribbean is considered one of the most disaster-prone regions in the world. According to the Long-Term Climate Risk Index (CRI),¹¹ three out of the ten countries most affected by extreme weather events in the last 20 years are located in the Caribbean.¹² From the point of view of natural hazards, historically the subregion has been confronted with frequent occurrences of mainly hydrometeorological and geological hazards. However, the Model Comprehensive Disaster Management Legislation and Regulations developed by the Caribbean Disaster Emergency

¹¹ Eckstein and others (2019).

¹² These countries/territories are Haiti, Dominica and Puerto Rico (United States). The Long-Term Climate Risk Index (CRI) calculates annual average death tolls, deaths per 100,000 inhabitants, total economic losses, economic losses per GDP unit, and number of events for the period 1999-2018 (Eckstein and others, 2019).

Management Agency (CDEMA) in 2013 described 37 possible hazards in the subregion, including geological, hydrometeorological, technological (chemical and radioactive), health- and environment-related, social and chained hazards. The natural hazards that are most threatening to the Caribbean include tropical storms, hurricanes, floods, drought, volcanic activity, tsunamis, and earthquakes.

- According to the EM-DAT International Disaster Database, nearly 72% of the disasters between 1970 and 2019 were triggered by hydrometeorological and climate-related hazards. These resulted in over 5% of the casualties but 91% of the affected population and 82% of the damage. Climate change exacerbates the frequency and magnitude of hazards, like hurricanes, storms and droughts (UN-Habitat, 2015). In fact, Atlantic Basin hurricane activity, measured by the NOAA Accumulated Cyclone Energy (ACE) index, has been particularly high in recent years. The 2017 and 2019 hurricanes Irma, Maria, and Dorian devastated national infrastructure across ten Caribbean islands. The economic toll has been tremendous, to the point that some Caribbean islands are still recovering from their impact.
- Available seismic data and historical records show the subregion's high exposure to geological hazards, such as earthquakes, volcanoes and tsunamis (UWI, 2020a). Seismicity recorded in the Caribbean is concentrated along the Antilles arc, from Hispaniola to Trinidad, where the Caribbean plate is overriding the North and South American plates.¹³ The most destructive earthquake happened in Haiti in 2010, affecting more than 3.4 million people, including more than 200,000 dead and over 300,000 injured.¹⁴ In addition, there are 19 live volcanoes in the Eastern Caribbean, meaning that they are likely to erupt again. Every island, from Grenada to Saba, is subject to the direct threat of volcanic eruptions.¹⁵ Volcanic disasters have historically cost more than 30,000 lives and have had tremendous economic costs. The eruption of La Soufrière in Saint Vincent and the Grenadines in 1979, and that of Soufrière Hills in Montserrat in 1995, cost approximately US\$ 1 billion and US\$ 5 billion, respectively (UWI, 2020b). One out of seven tsunamis worldwide take place in the Caribbean Sea.¹⁶ According to the National Geophysical Data Center and World Data Service NCEI/WDS Global Historical Tsunami Database, 33 tsunamis in the subregion caused damage ranging from the loss of a few shipping crafts to the destruction of entire towns, and 18 of them resulted in over 6,400 deaths (NGDC/WDS, 2020).
- The importance of coastal zones in the economic activities of Caribbean countries increases the exposure to tsunamis and other coastal hazards such as strong winds, ocean surges, and heavy rain. In fact, more than 70% of the Caribbean population lives in coastal cities, many of which are located in the low-elevation coastal zone, resulting in high exposure to sea level rises (UNEP, 2018). For instance, around 45% of the populations of Barbados, Jamaica, and Trinidad and Tobago live within 5 km of the coastline (ECLAC, 2012). Due to explosive urbanization in Caribbean countries, on any given day, more than 500,000 people are potentially at risk along coastal areas. This is more than twice the official estimates of loss of life in the horrific 2004 Indian Ocean tsunami. Unplanned urban expansion and inadequate construction practices are continuously increasing vulnerability.

C. Conditions leading up to 2020

- There have been several shocks over the past two decades that are likely to have affected global demand for tourism and local demand for tourism-related services. In this context, Mooney and Zegarra (2020) identified six episodes since 2000 that are preconditioning current responses in the Caribbean: (i) the 9/11 attacks (September 2001); (ii) the severe acute respiratory syndrome (SARS) outbreak (November 2002 to July 2003); (iii) the global financial crisis (December 2007

¹³ Most of the large and moderate earthquakes have been shallow intraplate earthquakes near plate boundaries, although some researchers have interpreted a few large earthquakes as plate interface events (Dewey and Suarez, 1991; Tannera and Shedlock, 2004). Nonetheless, the seismicity of the Caribbean deserves further attention and study. For instance, the active faults in Haiti were not well known and no detailed mapping of active fault traces was available before the 2010 earthquake (Saint Fleur, Feuillet and Klinger, 2019).

¹⁴ In the 1970–2019 period, these events accounted for 89% of total deaths, 48% of total injured, 6.6% of total affected, and 17.2% of total damage losses, for the 13 analysed countries (CRED, 2020).

¹⁵ Islands such as Grenada, Saint Vincent, Saint Lucia, Saint Kitts and Nevis have live volcanic centres, while other islands such as Antigua, Barbuda, Barbados, most of the Grenadines, Trinidad and Tobago are close to volcanic islands and are therefore subject to volcanic hazards such as severe ash fall and volcanically generated tsunamis (UWI, 2020c).

¹⁶ Most tsunami events in the Caribbean tend to be very short-fused, causing waves to reach the shores within minutes of an earthquake, volcanic eruption or submarine landslide.

to June 2009); (iv) the 2009 flu pandemic (H1N1) (January 2009 to August 2010); (v) the Ebola virus outbreak (December 2013 to June 2016); and (vi) the Zika virus outbreak (April 2015 to November 2016). While these six shock episodes differ in nature, origin, and duration, they all had some effect on global travel and tourism flows. In some cases, these episodes also unfolded over relatively long periods—in some cases several years—suggesting that unrelated factors may also have had some influence on tourism arrivals to Caribbean countries during the same period, including economic issues, natural phenomena, or geopolitical factors.

- In 2017, damage caused by Hurricanes Irma and Maria, which caused the collapse of much of the Caribbean's main energy, water, transport, and communication infrastructure, prompted a humanitarian crisis in the subregion. The cost of the estimated damage for Hurricane Maria alone totalled between US\$ 27 billion and US\$ 48 billion for the subregion. Total casualties for these hurricanes have proven difficult to establish.
- The 2017 Atlantic hurricane season reemphasized the exposure and vulnerabilities of the SIDS in the Caribbean. There were 17 named storms (wind speeds of 39 mph or more), 9 of which impacted one or more Caribbean SIDS. Of the 29 Caribbean SIDS (including islands that are United Nation members and associate members of United Nations Regional Commissions), 22 were impacted by at least one named storm, and many SIDS experienced catastrophic impacts from major hurricanes: 5 SIDS were impacted by three storms, 13 by two storms, and 4 by one storm. Tropical storm force winds (39 mph or more) hit 11 SIDS, 11 experienced hurricane force winds (74 mph or more), and 9 experienced direct landfall of a major hurricane. Over 70% of drinking water infrastructure was also severely affected in Puerto Rico by Hurricane Maria, primarily owing to direct damage to infrastructure and loss of electricity.
- Importantly, prior to the active 2017 hurricane season, the 2013–2016 drought was the most severe and extensive dry period in the Caribbean and Central America since at least 1950. This multi-year event appears to be related not only to El Niño-driven precipitation deficits, but also to temperature-driven increases in potential evapotranspiration. At its peak, this drought covered more than 60% of Puerto Rico's land area. Many Caribbean islands are still recovering from the impact of this disaster.

D. Vulnerabilities and underlying risk drivers

- Vulnerability is the human dimension of disasters. Risk, impact and capacity to cope evolve throughout a person's life cycle. Vulnerabilities may emerge and change, compound and persist over long periods, leading to disparities in income and inequality according to gender, ethnicity, and household and social status. This can contribute to the intergenerational transmission of vulnerability and widening inequalities. Although vulnerability is not a function of poverty alone, disasters magnify existing social inequalities and further disadvantage those who are already vulnerable (UNDRR, 2019).
- Many Caribbean SIDS share a set of environmental, economic, and social vulnerabilities, primarily owing to their absolute size and geographical location. Historical and inherent risk drivers, such as informality, inequality, poverty, and lack of political representation, result in a disproportionate impact of the pandemic on the most vulnerable. In addition, not all people have the same opportunity to make positive choices; location, age, gender, income, disability and access to social protection schemes and safety nets greatly affect the choices people make to anticipate, prevent and mitigate risks. As described in the previous chapter, the COVID-19 pandemic has highlighted the vulnerability of health, economic, social and financial systems in the subregion. Estimated and observed losses represent a high proportion of annual capital formation and are contributing to sluggish longer-term growth (UNDRR, 2013). Disaster risks pose a serious threat to Caribbean economies.¹⁷

¹⁷ For instance, in the case of catastrophic earthquakes with a 250-year return period, it is estimated that losses would be greater than 60% of annual capital formation (UNDRR, 2013).

Box 1 | Shared vulnerabilities across the Caribbean

Caribbean islands face many changes and related challenges including:

- isolation and dependence on imports, making islands more vulnerable to climate-related impacts
- critical dependence on localized sources of freshwater
- a number of impacts related to climate change such as:
 - temperature increases that will further reduce supply and increase demand for freshwater
 - vulnerability to drought in ways that differ from mainland regions
 - a projected significant decrease in rainfall
 - sea level rises, coastal erosion, and increasing storm impacts that threaten lives, critical infrastructure, and livelihoods
 - the economic consequences of coastal threats
 - coral bleaching and mortality due to warming ocean surface waters and ocean acidification
 - threats to critical economic marine resources, including Sargassum events affecting tourism, fisheries and food security

Source: R. Pulwarty, L. Nurse and U. Trotz, "Caribbean islands in a changing climate", *Environment: Science and Policy for Sustainable Development*, vol. 52, No. 6, Abingdon-on-Thames, Taylor & Francis, 2010; United States Global Change Research Program (USGCRP), *Fourth National Climate Assessment. Volume II: Impacts, Risks, and Adaptation in the United States*, Washington, D.C., 2018.

- In addition, the Global Health Security Index, which measures national capacities to prevent, detect, and respond to public health emergencies, gives the Caribbean a below-average score of 32, compared to a global average of 40.2 and an average for high-income nations of 51.9. This reflects the low capacity of most of the analysed countries to respond appropriately to public health crises (NTI/JHU/EIU, 2019). National indicators are shown in table 3 below.
- The INFORM COVID-19 Risk Index, prepared jointly by the European Commission Joint Research Centre and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), is an experimental adaptation of the INFORM Epidemic Risk Index that aims to use quantitative analysis to identify countries at risk of crises and disasters that could overwhelm national response capacities. The results place the subregion in the medium- to high-vulnerability range (table 4). The lack of coping capacities is high in most of the countries, except for Cuba, which is assigned a medium level of risk, and Haiti, where insufficiencies are ranked as very high.
- Cumulative disasters tend to surpass the capacities of many of these countries to deal with the disastrous consequences. The impact of these hazards, can therefore compromise and even reverse development gains, hindering countries' growth and their capacity to effectively implement poverty reduction strategies. As United Nations Framework for the Immediate Socioeconomic Response to COVID-19 indicates, at risk populations "tend to be marginalized and excluded; depend heavily on the informal economy for earnings; occupy areas prone to shocks; have inadequate access to social services; lack social protection; are denied access to such services on the basis of age, gender, race, ethnicity, religion, migrant status or other forms of discrimination; have low levels of political influence and lack voice and representation; have low incomes and limited opportunities to cope or adapt; and have limited or no access to technologies. And often these vulnerabilities intersect." (United Nations, 2020, p. 6).

Table 3 | Selected indicators from the Global Health Security Index, 2019

Indicators	Antigua and Barbuda	Bahamas	Barbados	Cuba	Dominica	Dominican Republic	Grenada	Haiti	Jamaica	Saint Kitts and Nevis	Saint Lucia	Saint Vincent and the Grenadines	Trinidad and Tobago
Health Indicators													
Population (<i>millions</i>)	0.097	0.389	0.287	11.333	0.072	10.738	0.112	11.263	2.948	0.053	0.183	0.111	1.395
Total life expectancy (<i>years</i>)	76.4	75.7	75.9	79.7	77.4	73.9	73.7	63.3	76.0	76.2	75.5	73.2	70.7
Doctors per 100,000 people	15.8	226.3	181.1	751.9	178.0	149.4	66.8	23.6	47.2	106.0	10.3	57.4	182.1
Nurses and midwives per 100,000 people	306.4	397.6	485.6	797.6	628.8	133.4	385.4	10.1	166.6	636.1	197.1	440.8	328.1
Hospital beds per 100,000 people	380.0	290.0	580.0	520.0	380.0	160.0	370.0	70.0	170.0	230.0	130.0	260.0	300.0
Access to skilled birth attendants (<i>percentage of population</i>)	100.0	99.6	99.0	99.9	96.0	99.6	99.3	41.7	99.1	100.0	98.7	99.0	100.0
Immunization rate (<i>measles/MCV1</i>)(<i>percentages</i>)	99.0	90.0	92.0	99.0	77.0	86.0	85.0	63.0	95.0	93.0	87.0	99.0	93.0
Domestic general government health expenditure per capita, purchasing power parity (<i>current international dollars</i>)	591.0	716.0	607.0	2202.0	373.0	428.0	308.0	15.0	324.0	639.0	285.0	314.0	1151.0
Out-of-pocket health expenditures per capita, purchasing power parity (<i>current international dollars</i>)	314.3	397.9	597.7	253.3	169.2	418.0	430.5	39.8	120.0	762.1	329.9	83.9	874.0
Percentage of homes with access to at least basic water infrastructure	96.7	97.8	98.1	95.2	96.5	94.5	95.6	64.2	92.9	98.0	98.2	95.1	96.9
Percentage of homes with access to at least basic sanitation facilities	87.5	92.0	96.5	90.8	77.9	82.7	78.3	30.5	85.4	91.9	90.9	87.2	92.1
Social Indicators													
Percentage of households with Internet	73.0	80.0	79.5	43.0	67.0	63.9	55.9	12.2	44.4	76.8	46.7	65.6	73.3
Mobile-cellular telephone subscriptions per 100 inhabitants	130.0	89.4	118.2	40.2	106.7	81.4	105.0	59.1	107.0	130.0	98.8	105.7	130.0
Adult literacy rate, population 15+ years, both sexes (<i>percentages</i>)	99.0	99.9	99.6	99.8	94.2	93.8	98.6	48.7	88.1	94.2	94.2	94.2	98.7
United Nations Development Programme (UNDP) Gender Inequality Index score (0-1)	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.4	0.6	0.7	0.7	0.7	0.7
Urban population (<i>percentages of total population</i>)	24.7	82.9	31.2	77.0	70.2	80.3	36.2	54.3	55.4	30.8	18.6	51.8	53.2

Source: Nuclear Threat Initiative/Johns Hopkins Center for Health Security/Economist Intelligence Unit (NTI/JHU/EIU), 2019 Global Health Security Index [online] <https://www.ghsindex.org/>.

Table 4 | INFORM COVID-19 Risk Index

Country	INFORM COVID-19 RISK	COVID-19 RISK CLASS	COVID-19 HAZARD & EXPOSURE	COVID-19 HAZARD & EXPOSURE CLASS	COVID-19 VULNERABILITY	VULNERABILITY	VULNERABILITY CLASS	COVID-19 LACK OF COPING CAPACITY	LACK OF COPING CAPACITY	LACK OF COPING CAPACITY CLASS	INFORM RISK	RISK CLASS	INFORM SEVERITY INDEX	INFORM SEVERITY INDEX CLASS	INFORM SEVERITY INDEX CLASS	INFORM COVID Risk + INFORM Risk	INFORM COVID - INFORM RISK
Ranks from/to	0-10		0-10		0-10	0-10		0-10	0-10		0-10		0-5	1-5		0-10	
Antigua and Barbuda	3.6	Medium	2.8	Medium	4.0	3.4	Medium	5.4	4.9	High	2.4	Low	-	-	-	3.0	1.2
Bahamas	3.9	Medium	3.4	Medium	4.2	3.9	Medium	5.0	4.4	High	2.7	Low	1.8	2	Low	3.3	1.2
Barbados	4.0	Medium	3.0	Medium	6.9	4.8	High	5.0	4.3	High	2.0	Low	-	-	-	3.0	2.0
Cuba	3.4	Low	2.9	Medium	6.4	4.4	High	2.5	3.0	Medium	3.2	Low	-	-	-	3.3	0.2
Dominica	4.2	Medium	3.9	Medium	5.3	4.0	Medium	4.0	4.8	High	3.4	Low	-	-	-	3.8	0.8
Dominican Republic	4.3	Medium	4.2	High	4.2	3.5	Medium	5.1	5.5	High	3.7	Medium	-	-	-	4.0	0.6
Grenada	3.6	Medium	2.7	Medium	4.8	3.7	Medium	5.0	4.8	High	1.8	Very Low	-	-	-	2.7	1.8
Haiti	6.6	Very High	6.8	Very High	3.9	5.6	High	6.8	7.7	Very High	6.4	High	3.3	4	High	6.5	0.2
Jamaica	4.1	Medium	4.0	Medium	5.2	4.1	High	3.7	4.2	High	3.1	Low	-	-	-	3.6	1.0
Saint Kitts and Nevis	3.3	Low	2.9	Medium	3.9	2.9	Medium	5.1	4.3	High	1.9	Very Low	-	-	-	2.6	1.4
Saint Lucia	3.9	Medium	2.5	Low	6.2	4.8	High	4.5	4.8	High	2.3	Low	-	-	-	3.1	1.6
Saint Vincent and the Grenadines	4.1	Medium	3.8	Medium	5.6	3.9	Medium	5.3	4.8	High	2.0	Low	-	-	-	3.1	2.1
Trinidad and Tobago	3.8	Medium	2.6	Low	6.3	4.5	High	5.1	4.6	High	2.5	Low	1.4	2	Low	3.2	1.3

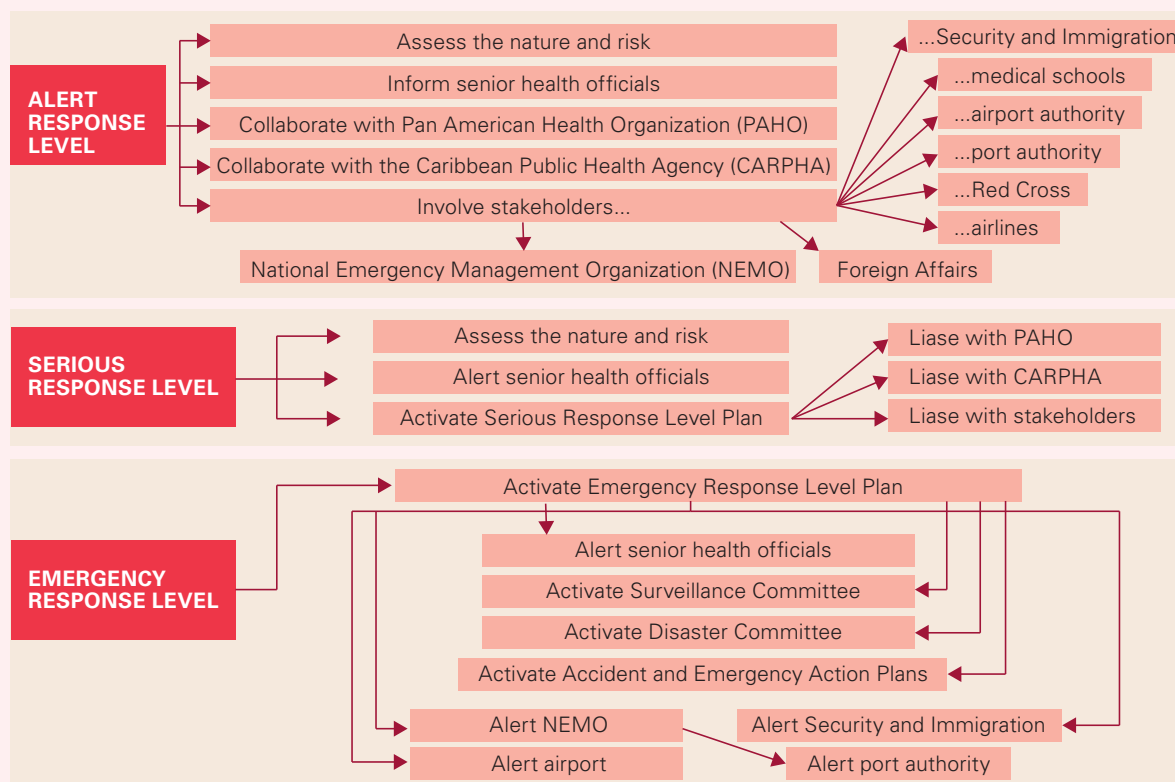
Source: Joint Research Centre/European Commission and United Nations United Nations Office for the Coordination of Humanitarian Affairs (OCHA), INFORM COVID-19 Risk Index [online] <https://drmc.jrc.ec.europa.eu/inform-index/INFORM-Covid-19>.

E. Response capacities and risk governance

- Cognizant of the need to strategically prepare and respond to conventional natural hazards, Caribbean governments have instituted a suite of multi-hazard legal and institutional frameworks over the years, to guide emergency operations during and immediately after disasters. Traditionally, most disaster emergency management frameworks were developed based upon the understanding of risks at the time. However, the dynamics of disasters are changing, as demonstrated by the unprecedented COVID-19 pandemic, which highlights the need for a paradigm shift toward a more comprehensive and systemic approach to address multiple hazards simultaneously, to strengthen overall resilience to disasters and place much greater emphasis on tackling risk drivers before the risks themselves materialize.
- Given the high exposure of Caribbean states to multiple hazards, it is critical to ensure development decisions are informed by comprehensive disaster risk analysis and mapping (Wilkinson and others, 2016). Historically, attempts to control development in coastal areas and protect ecosystems have been based upon law such as land-use regulations, building codes and environmental protection standards. Disaster risk management is still seen as the domain of specialized emergency management agencies, limiting the scope of disaster risk management activities. Disaster risk management plans are developed by emergency or disaster management agencies. These define key stakeholders, outline the roles and responsibilities of different actors and specify general processes for each stage of the disaster management cycle (Wilkinson, 2020).
- The Caribbean response to the regional COVID-19 outbreak might be described as a network of national responses strengthened by a regional support structure. All Caribbean countries have national disaster laws that govern how disaster risks are managed by the State.¹⁸ In response to COVID-19, ministries and departments of health have led the management of the public health impacts and health system services, in coordination with disaster risk management authorities. In Grenada, for instance, the Health Committee of the National Disaster Management Agency (NaDMA) was activated, to provide psychological and psychosocial support, among other functions (Shelton, 2020). In Saint Vincent and the Grenadines, the response was led by the Health Emergency Operations Centre through the national coordination mechanism, a three-tier trigger response system, involving stakeholders outside the direct health system, which also leverages support from regional agencies (diagram 2) (NEMO, 2020).
- Most national emergency management agencies in the analysed countries have primarily played a supporting role to the leading institutions, notably by providing logistic and operational capabilities to distribute essential goods to vulnerable populations and goods for first responders, setting up isolation and quarantine centres, procuring additional supplies, and mobilizing volunteers and external resources. In Tobago, for example, one of the roles of the Tobago Emergency Management Agency (TEMA) during the early phases of the outbreak was to organize transport of COVID-19 patients to health-care facilities in Trinidad (only one hospital is available in Tobago). This involved coordination among a number of players, including the Trinidad and Tobago Coast Guard, Fire Service, Defence Force, Community Emergency Response Team (CERT), County Medical Officer of Health Offices, Tobago Emergency Medical Services and TEMA, all of which formed the Rapid Response Team.
- In the case of Saint Lucia, during the COVID-19 pandemic the National Emergency Management Organization (NEMO) Secretariat continued to coordinate all response activities before, during and after changes of alert level, in accordance with the National Emergency Management Plan. NEMO also assumed an advisory role to the government liaison officers on business continuity planning and also to the Cabinet of Ministers for Saint Lucia on the declaration of a national emergency and the formulation of the National Shutdown Policy. In most Eastern Caribbean States, emergency management organizations assumed an advisory role to cabinets and to the major authorities in charge of the management of the crisis. In the case of Jamaica, three days after the first case was confirmed on 10 March, the whole country was declared to be a disaster area. Since then, the Ministry of Local Government and Community Development, the Ministry of Health and Wellness and the Ministry of Labour and Social Security have aligned to respond to the COVID-19 threat and ensure the public has access to government medical and social measures. A subcommittee of the cabinet was formed to deal with COVID-19. Countries with well-established social protection systems, such as Jamaica, have put in place mechanisms to strengthen social assistance to mitigate the social impact of the pandemic (Mera, 2020).

¹⁸ For example, disaster preparedness and emergency response in Antigua and Barbuda is under the authority of the Emergency Powers Act of 1957 and the Disaster Management Act of 2002, and disaster management is executed through the National Office of Disaster Services (NODS) (Arvis and others, 2021).

Diagram 2 | Saint Vincent and the Grenadines: COVID-19 national coordination mechanism, 2020



Source: National Emergency Management Organization (NEMO), Highly Infectious Diseases Preparedness and Response Plan, Saint George, 2020.

- The Cuban case showcases how preventive measures coupled with inter-institutional coordination mechanisms at the vertical and horizontal levels, including with the science and technology community, can contribute to effective management of the pandemic. The response mechanism in Cuba was activated ahead of the first case reported in the subregion and even before the declaration of the global pandemic (30 January 2020). A multisectoral committee was established to implement the COVID-19 Prevention and Control Plan, approved by the Government of Cuba. The National Civil Defence Staff of Cuba, as members of the multisectoral committee, provided guidance to the provincial and municipal defence councils. In parallel, a multidisciplinary scientific and research committee intensified research on COVID-19.¹⁹ Most importantly, Cuba's broad access to health services through a universal health system, its active community participation and effective communication mechanisms have also contributed to keeping Cubans safe. This response may enable the country to reactivate its tourism industry and recover faster.
- In many countries, the response to the pandemic has included review, revision or updating of existing plans and policies, including emergency response plans, emergency operation plans, standard operating procedures (SOPs), business continuity of operations plans, and sheltering management plans. Saint Lucia developed a 2019-Novel Coronavirus Preparedness and Response Plan and Saint Vincent and the Grenadines a Highly Infectious Diseases Preparedness and Response Plan. In addition, many countries established national multisectoral ad hoc COVID-19 task forces, including Antigua and Barbuda, Barbados, Bahamas, Cuba, Grenada, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago. Government sectors, primarily national disaster management offices, were also urged to strengthen capacities at the national and community levels to prepare for a hurricane response in the midst of the pandemic. Overall, governments in the Caribbean have been relatively successful in flattening the COVID-19 infection curve during the first wave.
- Subregional cooperation among Caribbean countries has also helped to mitigate the shortage of goods and services during the crisis. Regional collaborative frameworks have been leveraged by national governments to foster joint problem-solving. Through CDEMA and in support of its

¹⁹ Cuba started testing its own COVID-19 vaccine, Soberana 01, in late August according to the official Cuban Public Registry of Clinical Trials (RPCEC). The vaccine was produced by the State-run Finlay Institute of Vaccines.

18 participating states, a coordinating framework is in place for transnational and intergovernmental communication activities, implementation of measures to contain infections, joint attention to medical assistance and establishment of an international assistance and logistics centre in Barbados. CDEMA and the Caribbean Public Health Agency have provided key resources and expertise, including bolstering regional testing capacity and outbreak response logistics. Strategic alliances of the subregional bloc with key multisectoral actors enabled joint procurement processes, giving countries greater purchasing power (UNOPS/EIU, 2020). Other regional entities (such as the Pan American Health Organization (PAHO), Caribbean Development Bank (CARIBANK), and the University of the West Indies) have contributed additional technical and funding assistance, each working through the described mechanisms. South-south cooperation with Cuba and the Dominican Republic, including on knowledge-sharing, has also been significant. In sum, subregional cooperation has proven to be an effective way to compensate national deficiencies and strengthen overall capacity. Effective partnerships on climate risk monitoring, assessment and early warning have been built throughout the region, including in Cuba through the Caribbean Community Climate Change Centre (CCCCC) and the Caribbean Institute for Meteorology and Hydrology (CIMH).

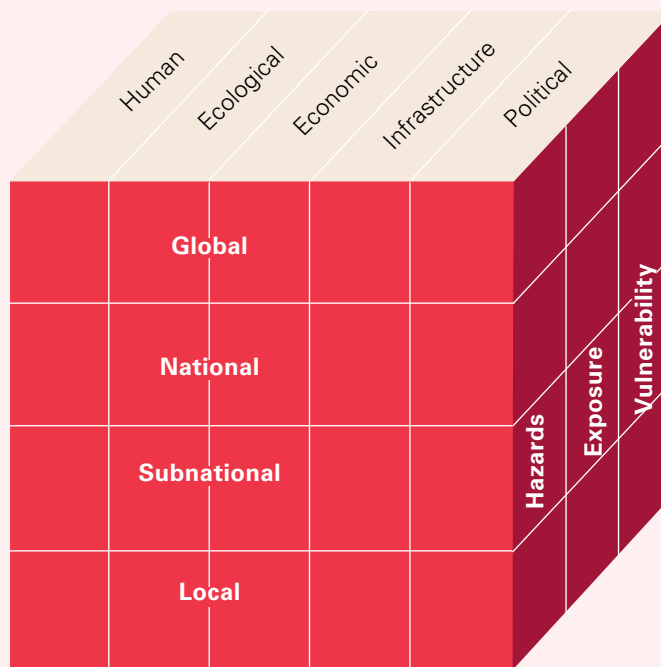
- The private sector has also mobilized to support communities and peers. In the Dominican Republic, for example, the National Council of Private Enterprise (CONEP) donated diagnostic equipment and testing materials to the government. The Organisation of Eastern Caribbean States (OECS) launched an initiative in partnership with private sector companies to invite the business community to support response efforts. Moreover, the Network of Caribbean Chambers of Commerce (CARICHAM), representing 21 chambers of commerce across the subregion, mobilized to support its thousands of members in aspects of business recovery, building capacity for business development and providing mentorship for repurposing companies, among other initiatives, mostly directed at micro-, small and medium-sized enterprises (MSMEs). Approximately 80% of all tourism businesses in the OECS region are MSMEs, which serve as a major source of employment for women, youth, and rural communities. CARICHAM has been leading efforts to engage the private sector in disaster risk reduction and capacity-building to ensure greater awareness and integration of risk into business practices and investment decisions.
- The response to the pandemic and the reprioritization of resources that it demands (including human resources) put an extra burden on national emergency systems. Hurricane preparedness in this context is challenging. In addition, the socioeconomic impact of COVID-19 has increased vulnerabilities, which translates into higher disaster risk. This means a climatic shock or other hazards could have a dire effect and potentially require national emergency systems to assist a larger number of people.
- While there are challenges, the COVID-19 pandemic can also be an opportunity to bring to the fore the importance of reducing disaster risk and the need to address underlying drivers. Disaster risk reduction requires multisectoral and multi-stakeholder actions. Strong governance systems, duly owned by key stakeholders and relevant national entities, are key to effectively anticipating, mitigating, managing and addressing risks. Following a whole-of-government approach, the health sector, including scientists and virologists, must also be well represented in disaster risk governance systems, to guide and lead strategies, policies, and plans to address biological hazards. At the same time, biological hazards need to be fully integrated into DRR policies and strategies. Ensuring the resilience of the health sector should be a priority of national risk governance frameworks (UNDRR, 2020). The systemic nature of risk and the cascading effects of hazards have been made tangible by the COVID-19 disaster. Policymakers now recognize how the pandemic reflects the interconnected nature of human, political, economic and environmental systems across sectors and countries.

F. Beyond the hazard-by-hazard approach to risk management

- The systemic nature of complex risk, including climate change, requires methods that transcend the traditional compartmentalized, sectorized and departmentalized approaches to disaster risk reduction. To avoid advancing fragmented responses to systemic problems, disaster risk reduction needs to be a truly multisectoral, multi-stakeholder effort. Structures to govern risk must be agile and adaptive, and recognizant of systems' interactions and reverberations if they are to deal with their complexity and develop the tools needed for risk-informed decision-making that allows human societies to live with uncertainty.

- The GRAF Impact Cube shown in diagram 3 summarizes drivers and potential impacts of systemic failures. There is a sound empirical basis for the occurrence and importance of all the variables in the diagram (see the discussion above and the bibliography). The challenges arise when assessing and managing their interdependencies across scales and communities, and finding new ways of exploring problems and threats, to identify options that take into account co-benefits and trade-offs.

Diagram 3 | Global Risk Assessment Framework (GRAF) Impact Cube



Source: United Nations Office for Disaster Risk Reduction (UNDRR), *Global Assessment Report on Disaster Risk Reduction 2019*, Geneva, 2019.

- The open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction has defined disaster risk governance²⁰ as “the system of institutions, mechanisms, policy and legal frameworks and other arrangements to guide, coordinate and oversee disaster risk reduction and related areas of policy” (United Nations, 2016, p. 15). Disaster risk governance therefore means having clear, actionable plans backed by legislation and strong institutions to ensure that existing disaster risks are reduced and new risks are not created, including by protecting the environment.
- Risk reduction solutions are needed in areas such as the economy and planning, water, sanitation and hygiene, education, health and nutrition, livelihoods, child and social protection, shelter and housing and public open spaces. Expanding the evidence base is crucial to better understanding of systemic disaster risks. Monitoring capacity varies greatly across countries and regions, hindering local preparedness and response capacities, as well as the global understanding of health-related disaster risks and losses. It is vital to promote the development, dissemination, adoption and application of evidence-based methods and tools to minimize health impacts from climate-related disasters (UNEP, 2018). Nature-based solutions must be a key consideration when strengthening disaster risk governance, as they can provide healthy ecosystems—coastal, marine or terrestrial—to protect people and property from natural hazards. Major efforts are needed from the public and private sectors to ensure that investments, for example in infrastructure, are informed by risk.
- All these efforts require data availability and the modelling of scenarios and options on which all actors can focus their efforts to reduce and prevent risk. Communication of risks and drivers must not only provide relevant information but should also lead to risk-informed decision-making, mobilizing necessary

²⁰ Governance has many connotations but in its broadest and most common form it denotes the structures and processes for collective decision-making (Nye and Donahue, 2000). It is also described as a different way of governing in which the State is not the only, or necessarily the most important actor (Stoker, 1998). Governance can refer to new—and better—forms of regulation that go beyond traditional hierarchical State activity, entailing “some form of self-regulation by societal actors, private-public cooperation in the solving of societal problems and new forms of multilevel policy” (Biermann and others, 2010, p. 21).

resources and taking action to reduce risk at all levels. Good governance needs to be transparent, inclusive, collective and efficient to reduce existing disaster risks and avoid creating new ones.

- Without suitable information, it is not possible to determine with certainty the real impact of disasters or to understand ongoing risk patterns.²¹ It is critical to systematically record disaster data, including information on the main damage and losses. Two of the greatest challenges, undoubtedly, are improving the quality of information and developing methodologies for estimating losses with higher levels of certainty. To better understand vulnerabilities, a systematic effort is also needed, with sustained funding for integrated risk assessment and disaggregated data collection. This involves harnessing data across different global frameworks and indicators that can be used to compare outcomes and changes over time —among and within countries and households— and to ensure that the needs of the most vulnerable do not continue to go unrecorded. As a greater volume of more reliable data becomes available, it will also be possible to measure the real impact of disasters and inform effective policymaking.
- Lastly, it is important to understand how life circumstances affect individuals' likelihood of being healthy and educated, having access to basic services, leading a dignified life and “building back better” (and greener) after a shock. We need sound socioeconomic management that is more fair, inclusive and equitable, and that is underpinned by a systemic, multidimensional understanding of vulnerability (including inequalities and disparities that hinder shared prosperity as the world grows wealthier). We must invest in human capital to enable risk-informed choices, empowering the vulnerable as the drivers of change.
- The global COVID-19 pandemic, of zoonotic origin, exposes the complex interaction between human, economic and natural systems and the systemic nature of risk. It also reveals deficiencies in risk governance across the health, disaster management, economic and other sectors. Recovery policies must integrate a systemic approach to risk and contribute to building robust multisectoral risk governance frameworks. Reducing disaster risk and underlying vulnerabilities to build resilience is at the heart of the sustainable development agenda and is more necessary than ever today.

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²¹ The EM-DAT International Disaster Database and DesInventar are two of the main databases that collect information on disasters. Reinsurers, such as Aon and Swiss Re Group, publish annual reports on the main disasters that have occurred and the associated losses. The Economic Commission for Latin America and the Caribbean (ECLAC) has been publishing assessments of the impacts of specific disasters in Latin America and the Caribbean for several decades. Although these reports are not databases, they do contain data on damages and losses in key sectors.

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III. Challenges, opportunities and recommendations for a risk-informed recovery and development in the Caribbean

A. Integrating a systemic approach to risk management into recovery plans

- COVID-19 demonstrates the urgent need for new conceptual and analytical approaches, to improve understanding and management of risk dynamics and complex, interconnected risk drivers and cascading consequences. Now is the time for the multi-stakeholder dialogue and action necessary to refine, extend and enhance the ability to understand and manage systemic risks. There will only be faster progress towards risk-informed sustainable development and regeneration if systemic risk and systems-based approaches are incorporated into the design of policies and investments across all sectors, in all geographies and at all scales. Improved risk governance is essential. There is an opportunity to build on progress to date.
- Integrating disaster risk reduction into development planning and mainstreaming it within and across sectors ensures that decisions and activities are risk-centred and risk-informed. This will also increase the resilience of the different sectors and their respective systems. For instance, resilient health systems based on primary health care at the community level can reduce underlying vulnerability, protect health facilities and services, and scale up responses to meet wide-ranging health needs in emergencies and disasters.
- Multisectoral, interdisciplinary and transdisciplinary management of different hazards, including biological ones, must be institutionalized and strengthened. This includes promoting: (i) active collaboration between disaster risk management sectors, organizations and platforms and all key sectors such as health, food systems and transportation; (ii) interministerial cooperation and collaboration; (iii) identification of and liaison with sector experts, including those on human rights, gender, disabilities and chronic illnesses; (iv) civil society engagement; (v) greater integration of science-policy-practice interfaces through a “science beyond silos” approach and interdisciplinary and transdisciplinary expertise; and (vi) robust mechanisms for data management and intersectoral sharing.
- In this context, scenario building can help facilitate more systemic thinking and decision-making, particularly if those involved are able to consider local events and regional and global drivers. Exploratory scenarios start with present situations and explore future impacts of various drivers. These drivers may include environmental degradation, financial crises, climate change, shocks such as disasters, or trends such as urbanization and migration. Understanding the degree of cascading risk and developing ways to isolate, measure and manage or prevent systemic risk is a new challenge. The interconnectedness of all of today’s systems amplifies this challenge.
- Many Caribbean countries are in the process of designing and developing recovery plans for the period after COVID-19. Recovery plans need to integrate risk and be aligned with disaster risk reduction policies and strategies. In this regard, it is crucial to make efforts to break down the silos that contain different authorities and stakeholders, such as disaster managers, and economic, social, environmental and health authorities. In sum, recovery plans need to shift from a response-oriented approach to a preventive approach, with a multisectoral effort aimed at mitigation, preparedness, monitoring and overall disaster risk management.

B. Reducing risk in a global context of increased vulnerabilities

- Any development plan or initiative seeking to respond to the socioeconomic damage wrought by COVID-19, or to prevent a similar future event, should take into account the drivers that caused COVID-19 to become a global disaster. The global pandemic has called attention to the nature of realized systemic risks and revealed the precariousness of the systems upon which trade, food, energy, transportation, and social safety nets depend. The disaster is affecting the social, economic and physical environments, which are the very systems that created the right conditions for the virus to emerge, propagate and to become a global catastrophe.
- Reducing vulnerability is one of the most effective ways to reduce disaster risk. Particular attention should be given to the understanding of how different people are being affected by the negative cascading effects of COVID-19. Governments should take the opportunity to accelerate

action to address historical and inherent drivers of risk, such as informality, inequality, poverty, and lack of political representation, to make sure no one is left behind. The high risk of loss of employment, the probability of being a victim of family violence, and women's excessive workload during lockdowns should all be taken into consideration when designing contingency and economic recovery programmes.

- Enabling a truly inclusive and participatory process when formulating recovery plans or when developing or reviewing disaster risk reduction strategies is critical to ensuring that all voices—particularly of the most vulnerable—are heard and that all expertise, knowledge, perceptions and contributions are taken into consideration. These strategies and their implementation are fundamental to efficient recovery from the systemic impacts of COVID-19, while mitigating and preparing for potential new waves of infection in other parts of the world and other major and recurrent hazards, such as the hurricane season in the Caribbean. Developing or reviewing these strategies and plans is more relevant than ever. In fact, many Caribbean countries are currently developing national disaster risk reduction plans and strategies—known as Country Work Programmes in CDEMA States—to meet target (e)²² of the Sendai Framework by the end of 2020. By taking a systemic approach to risk, these strategies should also serve to highlight and contribute to tackling underlying risk drivers and the root causes of vulnerability. A comprehensive disaster risk analysis should strengthen disaster risk governance frameworks with a focus on the most vulnerable.

C. Ensuring coherence between disaster risk reduction and the climate change agenda post-COVID-19 can be an opportunity for a greener, bluer and more resilient recovery

- Climate change has possible links to the occurrence of biological hazards, and it is also known to increase vulnerabilities and decrease capacities, undermining biological risk reduction. For example, vector-borne diseases continue to contribute significantly to the global burden of disease, and cause epidemics that disrupt health security and cause wider socioeconomic impacts around the world. Thus, efforts in public health, disaster risk reduction and climate change adaptation should be aligned (UNDRR, 2020). The current crisis should not weaken the agreements and targets established in major development frameworks, such as the 2030 Agenda and its Sustainable Development Goals (SDGs), the Paris Agreement, the Sendai Framework for Disaster Risk Reduction, the Addis Ababa Action Agenda of the Third International Conference on Financing for Development and the SIDS Accelerated Modalities of Action (SAMOA) pathway.
- Governments should recognize and value the role of nature in reducing risks. Our societies and economies are entirely dependent on having viable and productive ecosystems and are highly vulnerable to the accelerating decline of nature (GEC and others, 2020). Economic recovery efforts should accelerate the transition to a fairer, greener and bluer economy, and recognize that economic models that assume nature's bounty to be limitless are an existential threat to humanity. Countries' work on adaptation planning, national adaptation plans and national disaster risk reduction strategies provides a unique opportunity to take a systematic approach to accelerate progress towards the common goal of resilience-building in development.
- Most of the development plans of the countries of the subregion link climate change and disaster risk. Although climate change policies do not always address disaster risk reduction, most proposed adaptation or mitigation measures have beneficial effects in this regard (ECLAC, 2019). However, it is crucial to closely align climate change adaptation and disaster risk reduction policies and practices to ensure efficient use of capacities and financial resources and to enhance technical knowledge and expertise in assessing, understanding, reducing and managing both climate and non-climate risk. This will increase the effectiveness and sustainability of climate change adaptation and disaster risk reduction measures and improve disaster preparedness and response planning. To achieve this alignment, governments must build risk governance systems that address both. To this end, the Caribbean Community (CARICOM) has called for full implementation of the Sendai Framework for Disaster Risk Reduction and the Paris Agreement as necessary mechanisms to achieve the SDGs.²³

²² "Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020" (United Nations, 2015)

²³ See CARICOM/United Nations (2019, p. 2) and the work of the Caribbean Community Climate Change Centre (CCCCC), which is the CARICOM body on this subject (CCCCC, 2020).

- Recovery packages should recognize the connections between human and environmental health, striving to build resilience to risks, including climate change, biodiversity collapse and widening inequality. Climate and disaster risks do not exist in a vacuum, but interact with other risks and exacerbate socioeconomic vulnerabilities. Stimulus and recovery efforts should address the underlying causes of systemic risks, through inclusive, practical and targeted reforms and investments which balance socioeconomic and environmental priorities (GEC and others, 2020). Given the financial limitations of many Caribbean countries, national support will be crucial, and viable regional and international support opportunities should also be explored.

D. Financing disaster risk management and a risk-informed COVID-19 recovery plan

- The Caribbean countries face significant financial constraints that hinder their ability to implement policies for disaster risk reduction and recovery or reconstruction after a disaster. Their fiscal space is limited, owing to significant levels of debt and the burden of debt service on national budgets. In addition, many Caribbean countries are classified as middle-income and are therefore unable to access concessional financing.²⁴ The cost of implementing recovery plans after disasters and declines in revenues caused by the economic disruption can have long-lasting harmful economic impacts, undermining governments' development efforts.
- To date, the COVID-19 pandemic has been kept under control in the Caribbean by governments' isolation measures. However, the economic and social outlook is complicated, especially because governments cannot implement fiscal stimulus packages for production and transfers to individuals because of the aforementioned financial restrictions. Financing challenges also exist in relation to comprehensive disaster risk management. It is highly recommendable to establish strategies, overseen by ministers of finance or other relevant national authorities, to manage the financial impacts of disasters, respecting differences in the level of national responsibility for disaster risks in different countries (OECD, 2017).
- Regarding financing of response policies for COVID-19, there will be no progress without international and regional cooperation or solidarity. This problem should be addressed from a regional perspective. In this regard, the Economic Commission for Latin America and the Caribbean (ECLAC) has called for exceptional measures to be taken, to respond to an unprecedented crisis. The recommended five measures to increase fiscal space in the short and medium term are (Bárcena, 2020b):
 - (i) The ECLAC Debt for Climate Adaptation Swap Initiative, including creation of a Caribbean Resilience Fund (CRF). The major function of the fund would be to channel pledged climate funds and other contributions to gradually write down the Caribbean's debt stock. It is an innovative strategy that involves harnessing concessionary flows to transform the debt of the subregion into a source of investment in resilience-building and related projects, an attribute which differentiates it from standard debt reduction mechanisms. Member States will require flexible support from multilateral institutions, including lines of emergency financing. Relief for debt service payments can be extremely useful in supporting financing needs. The CRF proposal has the potential to offer much needed long-term relief, particularly to middle income countries (Bárcena, 2020c).
 - (ii) Debt standstills and access to concessional funding, changes to eligibility criteria of international financial institutions. The leaders of the G20 countries must allow multilateral organizations to grant loans at favourable interest rates and provide debt relief, especially for heavily indebted countries, postponing payment deadlines or forgiving the debt. Otherwise, payments will be impossible and fiscal space will be compromised (Bárcena, 2020b). Pursuing debt relief and restructuring efforts through a regional framework, such as the ECLAC Debt for Climate Adaptation Swap Initiative, could be a strategic approach.
 - (iii) Contingency bonds, with hurricane clauses. By using this type of clause in debt contracts, countries affected by disasters could defer payments of either interest or principal or both for a defined period (Waithe, 2019).

²⁴ According to ECLAC (2018), these levels of debt are linked to external economic shocks and disasters.

- (iv) Green and blue bonds. These financial instruments would give regional governments new opportunities to access international markets to finance resilient infrastructure, and disaster risk reduction and adaptation activities. They represent an innovative way to mobilize private capital for sustainable development, allowing public sector institutions and local governments to reorient capital markets towards low-carbon and climate-resilient investments.
- (v) Liquidity support by issuing special drawing rights (SDRs). A general allocation of SDRs would especially help support developing countries, such as the Caribbean countries, that are inadequately covered by current international financial safety nets.

E. Boosting support for and use of science and technology

- Although regional research and development (R&D) investment in the Latin America and the Caribbean is particularly low and generally not oriented towards disaster risk management, the scientific community has managed to make significant progress towards an evidence-based understanding of risk. In the ongoing crisis, some research projects into particular natural hazards and their impacts that were previously prioritized may be affected or even cancelled. Much of this research, however, still remains valid, given the focus on analysing hazards whose dynamics are unrelated to the current pandemic. There is an urgent need to assess the additional needs of countries for dealing with contingencies that are unrelated to COVID-19, while also strengthening risk governance systems based on a systemic risk and science-based approach.
- Policymakers should increase investment in evidence-based policy and integrated action across the interconnected domains of disaster risk reduction, climate change action and sustainable development. The COVID-19 crisis is generating evidence that contributes to development of science-based policies that can tackle issues relating to climate change and future disaster risk. It is crucial to better understand the factors behind biological risk and the impact of urban growth, land-use planning (or the lack thereof), unsustainable natural resource management, and the destruction of land, coastal and marine ecosystems. To help with future planning, it is also essential to look at the fragmentation of production chains and the reliance on imported products to tackle the pandemic. Lastly, comprehensive analysis is needed of the strengths and weaknesses of health and sanitation systems, of the importance of social protection systems, and of governance challenges.
- Risks do not arise and materialize in complex systems in one sector at a time. However, current institutional structures overlook these multifaceted issues owing to protocols that only require responses to what falls within their specific jurisdictions. Health crises remain in the realm of health ministries, while economic issues are in the remit of ministries of finance or employment. Likewise, ecological risks that overlap with cultural or political risks are still, in most cases, considered in parallel and separately, but are better researched and understood in terms of their interdependence. Research across sectors and increased communication across societal systems need to be developed (UNDRR, 2019).
- In short, it is critical to improve our understanding of how risk is generated and propagates across interconnected systems, how impacts cascade with unexpected consequences when risk manifests, and especially how we can prevent this (Mizutori and Hackmann, 2020). Improved connections and contact between sectors will make communities more robust and resilient to long-term risks and sudden-onset emergencies.

F. Strengthening regional integration and cooperation, to promote effective regional governance for disaster risk and socioeconomic recovery

- The health crisis tests the ability to cooperate, learn and adapt in the face of deep uncertainties and heightened risks. Multisectoral and multi-country coordination mechanisms to identify, combine and assign resources, thus securing economies of scale and efficiencies, can facilitate concerted recoveries and reduce vulnerabilities. The COVID-19 pandemic and its short-, medium- and long-term implications highlight the importance of building channels of cooperation and common understanding based on humanity and solidarity.
- In this context of increasing complexity, interdependence and systemic risk, a review of existing risk governance structures is warranted. This should include reflection on the role of disaster risk management systems in each of the countries and in the subregions to ensure they are appropriately

equipped (for example, with resources, knowledge, mandate and power) to effectively address complex and cascading impacts that require a multisectoral approach. Interconnected governance systems that are duly owned by key stakeholders and relevant national and regional entities are key to effectively anticipating, mitigating, managing and addressing risks.

G. Integration of disaster risk management into development planning

- The systemic nature of complex risk requires an approach that transcends traditional compartmentalized disaster risk reduction methods. The intricacy of disaster risk cannot be overcome using the conventional troubleshooting model of compartmentalizing and trying to resolve the symptoms. If efforts to reduce disasters are to be effective, it is vital that they move away from the reductionist approach that ignores the systemic characteristics of extreme events. This applies to institutional arrangements for risk governance, community organizations, research efforts and policymaking. Development planning can play a fundamental role (Bello, Bustamante and Pizarro, 2020), helping to infuse risk governance with a systemic approach. Structures to govern risk must respond to complex, adaptive systems and develop the necessary tools for risk-informed decision-making that allow human societies to live with uncertainty.
- Planning for development recognizes the complexity of interrelationships between the elements that interact (processes, instruments, institutions and actors) when addressing development hurdles. A systems-based approach to planning entails avoiding fragmented responses, while recognizing organizational and operational challenges. Practical challenges relating to the management of complex interactions include different time horizons for public actions, and interlinkage of different sectors, actors and levels of government.²⁵ Development planning is the mechanism par excellence to give coherence to these different dimensions, pursuing a common goal through interlinked practices (Máttar and Cuervo, 2017).
- Most countries in the Caribbean have national planning instruments.²⁶ While an analysis of development plans in the subregion reveals areas for improvement, some countries have made progress in outlining sustainable development agendas. One weakness revealed by the COVID-19 pandemic is that a comprehensive understanding of disaster risk reduction has not been built into development plans. A response to the climate challenge and sustainable development are not possible without an understanding of the systemic nature of risk, which entails integrating disaster risk into national planning. This is an urgent task for countries.
- In the post-COVID-19 Caribbean, national sustainable development plans will need to define a strategy for recovery and long-term integrated development that is anchored in the 2030 Agenda for Sustainable Development, reflects national circumstances and priorities and addresses the specific vulnerabilities of the subregion. These medium- to long-term plans should also serve as a development framework that takes into account exogenous risk factors and integrates strategies to build resilience and respond effectively to economic and environmental shocks, (ECLAC, 2020a).
- In view of COVID-19, the new generation of national sustainable development plans must also incorporate policies that respond to the potential risks of pandemics. For example, the rate of urbanization in the Caribbean is expected to overtake that for Latin America, rising from 70% in 2015 to 82.5% in 2050. As the Caribbean becomes increasingly urban, it is vital to make it more resilient to social and environmental risks, incorporating planning tools that take into account problems such as informal settlements, substandard housing and territorial inequalities, all issues that have become more urgent in the COVID-19 era (ECLAC, 2019).

²⁵ These challenges can be categorized as follows: Intertemporal. Public action unfolds with different time horizons, so mechanisms must link the short, medium and long term; Intersectoral. Public action is taken by institutional blocs specialized in themes, areas or sectors. Planning must interlink these actions and take into account their interactions; Multi-scale. Public action is taken at levels of government with different scopes and territorial coverage. As with intersectoral challenges, planning must align the various actions, understanding interactions, managing links and synergies between the different levels, from the global to the local; and, interlinking multiple actors. Public action is taken with respect to a multiplicity of actors with different interests and values. Planning must identify and understand these actors and their interrelations, promoting participation and dialogue in search of a common goal (ECLAC, 2019).

²⁶ This is the list of national planning instruments by country: Antigua and Barbuda (Medium-Term Development Strategy 2016 to 2020, the National Development Plan (in preparation, with support from ECLAC); Bahamas (National Development Plan of the Bahamas: Vision 2040); Barbados (Barbados Growth and Development Strategy (BGDS) 2013–2020, National Strategic Plan of Barbados 2005–2025); Dominica (National Resilience Development Strategy Dominica 2030); Dominican Republic (National Development Strategy 2010–2030); Grenada (National Sustainable Development Plan 2020–2035, National Physical Development Plan); Haiti (Plan Stratégique de Développement d'Haïti); Jamaica (Vision 2030 Jamaica: National Development Plan (2010), national spatial plan (in preparation)); Saint Lucia (Medium Term Development and Strategic Plan (2016–2020, under review), national development plan in preparation, with support from ECLAC); Saint Vincent and the Grenadines (National Economic and Social Development Plan 2013–2025); Trinidad and Tobago (Vision 2030: The National Development Strategy of Trinidad and Tobago 2016–2030). All this information can be consulted in ECLAC (2020b).

- Since past development plans have generally been short-lived, often due to a lack of political support, it will also be important to foster preparation of new national development plans through truly participatory and inclusive processes. One approach that proved successful has been to give responsibility for national development planning to an autonomous body with the necessary legislative mandate to ensure its longevity. Grenada is currently considering such an approach, with its proposal to establish a Sustainable Development Institute (SDI) to support a coordinated and integrated approach to development planning, and to implement the country's National Sustainable Development Plan 2020–2035. With the establishment of the SDI, Grenada will join Jamaica as the only Caribbean countries with a dedicated agency for national development planning. More countries are encouraged to adopt this apolitical approach to national development planning in order to institutionalize the process and make next-generation development plans truly sustainable in the long-term (ECLAC, 2020a).
- A return to normal is therefore a return to those same mutually reinforcing conditions that gave rise to the pandemic emergency. Resuming business as usual—rebuilding the same systems—will generate more risks, yielding similar outcomes. If they are correctly structured, the actions that governments choose, can transform the sectors that they seek to save. The urgency is evident, and the opportunity is there.

H. Final remarks

- The review of the impacts of the COVID-19 pandemic and the challenges it poses to national systems calls for comprehensive reflection on the need to strengthen current risk governance mechanisms in order to better understand, prepare for and respond to risks that are more complex and interconnected. The initial results of the study carried out in the Caribbean indicate that regional mechanisms build capacity in information, communications, knowledge-sharing and procurement (acquisition of critical medical supplies). These mechanisms also facilitate effective transboundary actions that enhance the integrated response in the region. The examples of multisector collaboration at the regional level could serve as models for developing the capacities of national systems to adopt a multisectoral approach to addressing risk governance challenges in the context of systemic risks in the future. The analysis of the pandemic's impacts shows that profound changes are needed in practice and policy, where the involvement of development actors and policymakers in disaster risk reduction decisions—and their thorough understanding of this approach—is critical.
- The economic and social effects of COVID-19 are devastating for the Caribbean and will last for several years. The pandemic is opening up the cracks in current development patterns and highlighting their limitations, globally and particularly in Latin America and the Caribbean. Until recently, there was a consensus among orthodox economists that fiscal balance, minimal State intervention in the economy, and trade and financial openness would suffice to generate growth and redistribution. There was unfettered confidence that liberalization of markets for goods, services, and capital (but not free international movement of labour) would be the magic formula for prosperity. This ideological framework sustained a system of international governance whose main objective was to minimize national barriers to trade and investment (Bárcena, 2020a).
- Countries do not function without public goods, but States cannot produce public goods in a world in which it is not possible to collect taxes progressively or where countries have unsustainable levels of debt. A robust protection system is a public good. This pandemic has showed, like any major disaster, that countries must have such systems to provide the necessary health care and social protection. Recovery, then, cannot restore the previous framework: it must build back better, changing the development model.
- It is now recognized that the State must play a much more important role, regulating and coordinating markets and promoting social protection and equality. Building back better in the Caribbean must be rebuilding with equality and resilience, for instance by implementing active fiscal policies with a gender approach to mitigate the disproportionate effects of the COVID-19 pandemic on women and by forging political compacts at all levels based on feminist principles of redistribution of power, time, work and resources. The aim is to move towards a development model that has equality and environmental sustainability at its centre. In the Caribbean, which is threatened by multiple hazards, a systemic approach is required to reduce disaster risk and vulnerabilities.

- Equality and structural change must go hand in hand. It is necessary not only to build capacities, but also to establish regulatory mechanisms and incentives to direct them towards social inclusion and environmental protection (Bárcena, 2020a). Policies for digital technologies and cleaner technology sectors (renewable energy, less predatory and more science-based agriculture and the circular economy) are needed, to generate a new low-carbon growth pattern, respecting the right of future generations to have an environment that favours their own development. A change in the direction of investment and technical change are required to prevent continued climate change and destruction of global common goods and biodiversity, which will have high costs for current and future generations (especially the poorest). Like the goals of social inclusion, the objectives of environmental care are not a barrier to growth. In fact, they define an investment horizon. Public investment, informed by risk, must play a key role in broadening this horizon, promoting and coordinating complementary private investments that build resilience.

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This report was prepared by the Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Office for Disaster Risk Reduction (UNDRR). Its preparation was directed by the Executive Secretary of ECLAC, Alicia Bárcena, and the Chief of the Regional Office for the Americas and the Caribbean of UNDRR, Raúl Salazar.

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