Committee: Economic and Social Council
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Introduction

When picturing the Caribbean, many people think of an idyllic vacation destination: white sands, crystal clear waters, and tropical weather. What many people are not aware of is a frequent phenomenon in the Caribbean: the hurricanes that ravage these beautiful islands yearly during hurricane season. The high humidity levels and the warm air present the perfect conditions for disastrous hurricanes to form. Historians have observed and classified seven hurricanes as disastrous since 1780, but there have obviously been countless hurricanes that have greatly affected the Caribbean since the beginning of civilization. The seven main natural disasters include The Great Hurricane of 1780, San Ciriaco in 1899, Hurricane Gilbert in 1988, the hurricane season of 2008, Hurricane Sandy in 2012, Hurricane Joaquin in 2015, and most recently, Hurricane Irma in late 2017. The Atlantic Hurricane Season runs from June to November 30 and peaks from August to September.

The people of the Caribbean view hurricanes as a natural part of their life. However, the impact they have on the ecology, topography, economy, industry, and agriculture of the area is huge. Firstly, populations in affected areas witness devastating irreparable damage to their property, housing and land. Hurricanes also cause soil degradation and flooding. Populations, too cautious to live close to the water where storms have their strongest effects, start to move towards the centre of their islands, abandoning the beaches, causing demographic shifts and rapid urbanization. Hurricanes are disastrous to agriculture and the economy. Caribbean countries focus on agriculture and tourism as primary financial sources in their economies, both of which can be dramatically impacted by the negative effects of hurricanes. Furthermore, the negative economic effects that hurricanes can bring, often lead to political tensions and instability, making it difficult to reach consensus on the ways and means of post-hurricane recovery.

With populations growing in the Caribbean day-by-day, leaders are searching for feasible and sustainable ways to rebuild their countries after a hurricane. However, what many of them are not focusing on is ensuring resilience. Since hurricanes constitute a large part of life in the Caribbean, construction must be undertaken with materials and technology that are resistant to hurricanes. While this may be costlier, in the end it makes economic sense: according to UNDP Director for Latin America and the Caribbean Jessica Faieta, "We can save $7 for every $1 spent in resilience building". In addition to resilient construction, communities must have resilient sources of income. Hurricanes Irma and Maria have been estimated to have cost up to $200 billion. The economic consequences for populations have been severe. In many cases, they have led to large waves of emigration. Caribbean countries should also find new ways to support their populations in having stable economic sources that cannot be affected by natural disasters. Because the impact after a hurricane is sudden and often extreme, international response must be coordinated and targeted to ensure that multilateral and bilateral aid is optimally funnelled to affected countries to address the short-term response, but also to focus on a long-term strategy of resilience building. That will mean that when the next

disaster strikes, effects will be lessened, populations will be better equipped to bounce back from these disasters, and less people will lose their lives.

Definition of Key terms

Hurricane

"Hurricanes (or tropical cyclones) are giant, spiralling, tropical storms that can pack wind speeds of over 160 miles (257 kilometres) an hour and unleash more than 2.4 trillion gallons (9 trillion litres) of rain a day. The Atlantic Ocean's hurricane season peaks from mid-August to late October and averages five to six hurricanes per year."[1]

Effects of Hurricanes

Hurricanes are responsible for large waves, heavy rain, floods and storms, soil erosion, rising sea water level and upset waters that disrupt international shipping.

Caribbean

"The Caribbean is a region that consists of the Caribbean Sea, its islands (check the link below), and the surrounding coasts. The region is southeast of the Gulf of Mexico and the North American mainland, east of Central America, and north of South America."[2]

Urbanization

"The process by which large numbers of people become permanently concentrated in relatively small areas, forming cities."[3]

UNDP

United Nations Development Program (includes the Sustainable Development Goals)

Break-Even Mitigation Percentage (BEMP)

"Looks at hurricane damage likelihood over 50 years in a given location, calculating the amount of damage predicted, as well as the building type and the way it was constructed. It uses this data to determine whether making these structures hurricane-resistant is an efficient use of money and to calculate how soon the anticipated cost savings in an avoidance of hurricane damage will pay back the initial expense."[4]

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[1] "How Hurricanes Form and What Makes Them So Destructive." National Geographic, 20 Nov. 2017, www.nationalgeographic.com/environment/natural-disasters/hurricanes/.

[2] "Caribbean." Wikipedia, Wikimedia Foundation, 1 July 2018, https://en.wikipedia.org/wiki/Caribbean

[3] Britannica, the Editors of Encyclopaedia. "Urbanization." Encyclopædia Britannica, Encyclopædia Britannica, Inc., 20 Sept. 2017, www.britannica.com/topic/urbanization.

[4] Mortice, Zach. "Hurricane-Proof Construction Methods Can Save Buildings, Communities." Autodesk 2D and 3D Design and Engineering Software, Redshift EN, 16 Apr. 2018, www.autodesk.com/redshift/hurricane-proof construction-methods-can-save-buildings-communities/.

Background Information

Climate Change

Scientists are carefully studying the correlation between climate change and the increased intensity of hurricanes. Recently, Kerry Emanuel, atmospheric sciences professor at the Massachusetts Institute of Technology, published a groundbreaking research that studies the link between warmer temperatures and the potential for increased wind speeds in hurricanes.

In his study, Emanuel analysed the evolution of 6,000 simulated storms, examining how they evolved under historical conditions of the 20th century. He then compared this data with how they could evolve at the end of the 21st century, if greenhouse gas emissions keep rising. He concluded that a storm that increases its intensity by 60 knots in the 24 hours before landfall might have been likely to occur once a century in the 1900s. By the end of this century, they could come every five to 10 years. Numerous scientific findings conclude that climate change is contributing to the intensity of hurricanes. Furthermore, scientists warn that climate change is likely to contribute to the frequency of storms in the future, if it is not addressed in a substantial way.

Hurricane Irma

Hurricane Irma, the strongest Atlantic basin hurricane ever recorded, is a Category 4 hurricane that took place from August 31 to September 6, 2017, in Florida, Georgia, and South Carolina. After September 6 and until September 11, the storm moved towards the Caribbean, greatly affecting the Bahamas, Cuba, Haiti, the Dominican Republic, Puerto Rico, the Virgin Islands, Antigua and Barbuda, the Barbados, Saint Kitts and Nevis, and the British, French, and Dutch Antilles. The hurricane was the most destructive in Barbados, destroying 95% of the buildings.

Hurricane Maria

Hurricane Maria first hit the Dominican Republic on September 18, 2017 as a Category 5 hurricane. A few days later it affected the Virgin Islands, Guadeloupe, Martinique, Haiti, Saint Kitts and Nevis, as well as the U.S.A. territory of Puerto Rico, being the first Category 4 hurricane to hit the area in 85 years.

Territory	Fatalities	Damage (2017 USD)
Anguilla (UK)	1	$290 million
Bahamas	0	$135 million
Barbados	1	N/A
Barbuda (AG)	3	$150 million
British Virgin Islands (UK)	4	$3.47 billion
Cuba	10	$513 million
Haiti	1	N/A
Puerto Rico (US)	3	$1 billion
Saint Kitts and Nevis	0	$19.7 million
Saint Martin and Saint Barthélemy (FR)	11	$4.07 billion
Sint Maarten (NL)	4	$2.5 billion
Turks and Caicos Islands (UK)	0	$500 million
United States	92	$50 billion
U.S. Virgin Islands	4	$2.4 billion
Totals:	**134**	**$64.8 billion**

Hurricane Nate

"Hurricane Nate was the costliest natural disaster in Costa Rican history. An unusually fast-moving tropical cyclone, it caused widespread destruction and casualties in Central America during early October 2017, before making landfall on the US Gulf Coast."[5] It affected Costa Rica, Cuba, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and the United States.

[5] "Hurricane Nate." Wikipedia, Wikimedia Foundation, 4 July 2018, https://en.wikipedia.org/wiki/Hurricane_Nate#Preparations_and_impact

Aftermath

Measuring the economic impact of hurricanes

In the Caribbean, because of its geographic position, the climate, and the characteristics of the area, people depend heavily on agriculture, natural resources, and tourism as main sources of income. Naturally, when a hurricane affects an area so greatly, all these

Country	Fatalities	Missing	Damage (2017 USD)
Costa Rica	14	0	$562 million
Cuba	0	0	N/A
El Salvador	1	0	N/A
Guatemala	5	3	N/A
Honduras	3	3	N/A
Nicaragua	16	1	N/A
Panama	7	0	N/A
United States	2	0	$225 million
Totals:	**48**	**7**	**$787 million**

sectors experience slowdowns. Tourists do not choose the Caribbean as a vacation

Territory	Fatalities	Missing	Damage (2017 USD)
Dominica	65	0	$1.37 billion
Dominican Republic	5	1	$63 million
Guadeloupe (France)	2	2	$120 million
Haiti	3	0	N/A
Martinique (France)	0	0	$40 million
Saint Kitts and Nevis	0	0	$13 million
Puerto Rico	64	60	$90 billion
United States Virgin Islands	3	4	
United States	4	0	N/A
Totals:	**146**	**67**	**$91.6 billion**

destination, crops are destroyed and natural resources are affected.

Usually, governments focus on rebuilding the damaged structures and fields. However, apart from that, the affected regions also experience another kind of slowdown. The various businesses stop working throughout the rebuilding process, sometimes they

must relocate and what many governments fail to calculate (or do not have enough funds to make up for) is the amount of money the businesses lose when they are not operating. This has been a major reason that Caribbean countries have encountered difficulty in establishing a stable economy. "Most Caribbean islands are not poor. With a GDP per person of nearly $9,000 on average, the independent island states qualify as middle —and high— income countries. But most have high levels of public debt and many have suffered from a decline in prices of agricultural goods."[6] This means that at times when producers need higher prices to recover from the damages done to their properties, globalization and international trade, where competition for lower prices is vital, do not allow them to charge a little more.

In the past, there have been countless donations from individuals or governments so that Caribbean countries could implement short-term solutions. In addition to addressing reconstruction related to the damage inflicted by hurricanes, Caribbean governments have realized that a very significant way to use funds, is to direct them towards adapting to climate change according to the Paris Climate Agreement. These funds however have not been well coordinated in the past, which led various donors to pull their donations and direct them towards regions where funds are well utilized.

Apart from the destruction of infrastructure and crops, Caribbean economies experience a significant slow-down in the tourism industry. The reputational damage that Caribbean countries experience leads to a decline in tourism, which is one of the main sources of income for many of these countries.

Migration implications

Since natural disasters cause excessive damage to people's property, businesses, and everyday lives, people are forced to leave their countries and emigrate to other countries, such as the United States, or European countries that are former or current colonizers of the areas (such as Great Britain, France, or the Netherlands).

In countries, such as the United States, damage from hurricane season is immediately fixed and people can live in their homes a few months after the disaster; however, the bad economic situation of the Caribbean countries does not allow them to "bounce back" as effectively.

[6] "How Hurricane Irma Will Change the Caribbean." The Economist, The Economist Newspaper, 14 Sept. 2017, www.economist.com/the-americas/2017/09/14/how-hurricane-irma-will-change-the-caribbean

Hurricanes have caused a flow of immigrants leaving their country of birth, with 9.5 million people having emigrated in 2017 from Latin America and the Caribbean. Although most of them are considered economic refugees/immigrants, there has been recently a debate about what percentage of them should be considered climate change or environmental refugees/immigrants. This aspect of the issue is important because many of the countries that are accepting immigrants from the Caribbean region prioritize the need to accept climate change refugees due to the fact that they are seeking asylum from a dangerous environment in their home countries.

Major Countries and Organizations Involved

United Nations Development Program

The UNDP has contributed a lot of time and money in building resilience in the Caribbean. As the issue falls under the actions that should be taken for achieving the 13th Sustainable Development Goal (Climate Action), the UNDP for Latin America and the Caribbean has prepared various projects to build a more climate resilient community, establish green sources of energy, and improve climate resilience.

World Bank

Currently, the World Bank Group is supporting Caribbean countries with almost US$1 billion focused on strengthening resilience and financial protection against disasters —of which nearly half a billion dollars is intended to be disbursed on disaster risk management (US$430 million).[7]

CARICOM Countries

The countries of the Caribbean Community have done their best to provide their people with both, short and long-term solutions. Right after the disaster, CARICOM launched a program

[7] "World Bank Provides US$65 Million for Dominica's Post-Maria Reconstruction." World Bank, www.worldbank.org/en/news/press-release/2018/04/13/world-bank-provides-us65-million-for-dominicas-post-maria-reconstruction.

called "CDEMA Legacy Project", in order to support the recovery and reconstruction efforts in Antigua & Barbuda, Dominica, British Virgin Islands (BVI), and Turks & Caicos Islands.[8]

European Union & European Commission

The European Union has offered €300 million so as to ensure that the countries affected will build resilient structures that are capable to withstand more intense hurricanes.

Government of China

"In the immediate hurricane aftermath, the Government of China offered US$5 million to support more resilient roofs for affected women and men in both countries, US$3 million for Dominica and US$2 million for Antigua and Barbuda, whose residents were all evacuated for the first time to Antigua due to the massive hurricanes."[9]

United States of America

The United States provided countries hit by hurricane Irma with US$1.2 million, which rendered the provision of health-aid possible, restored water access to cut off areas and financed the rebuilding process. Apart from that, countless American universities have employed special groups conducting research on new, innovative, resilient materials.

Timeline of Events

This list shows the timeline of the main hurricanes of the 2017 Atlantic Hurricane season (mostly in the Caribbean but you are also going to find a few that happened mostly in the U.S.A. coastal area).

Date	Event	Significance
August 17 - September 02, 2017	Hurricane Harvey	Wettest tropical cyclone on record in the U.S.
August 30 - September 13, 2017	Hurricane Irma	Strongest storm on record in the open Atlantic region.
September 5 - September 25, 2017	Hurricane Jose	The longest-lived Atlantic hurricane since Hurricane Nadine in 2012.

[8] CARICOM Secretariat. "CDEMA Implements Post-Hurricane Irma Legacy Project in Antigua and Barbuda." Our Culture - Caribbean Community (CARICOM), https://caricom.org/media-center/communications/news-from-the-community/cdema-implements-post-hurricane-irma-legacy-project-in-antigua-and-barbuda.

"UNDP and Partners Assess Progress and Challenges for Caribbean Recovery Six Months after Massive Hurricanes." UNDP, www.undp.org/content/undp/en/home/news-centre/news/2018/UNDP-and-partners-assess-progress-and-challenges-for-Caribbean-recovery-six-months-after-massive-hurricanes.html.

Date	Event	Significance
September 16 - September 30, 2017	Hurricane Maria	The worst natural disaster on record to affect Dominica and Puerto Rico.
October 4 - October 11, 2017	Hurricane Nate	The costliest natural disaster in Costa Rican history.

Relevant UN Treaties, Resolutions, and Events

Since the hurricanes happened recently, the UN has not achieved to pass a resolution on the issue, or form a treaty; however, they have held various fundraising events and high-level meetings, all of which highlighted the need for international collaboration to "build back better". Some include:

CARICOM-UN High Level Pledging Conference: 'Building a more Climate Resilient Community'
Over 400 high-level representatives from governments, multilateral and civil society organizations and the private sector gathered at UN headquarters on 21 November at the "CARICOM-UN High-level Pledging Conference: Building a more Climate-Resilient Community" to mobilise a broad partnership to support reconstruction efforts after hurricanes Irma and Maria decimated several Caribbean Countries. Support included over US$1.3 billion in pledges and over $1 billion in loans and debt relief.[10]

The ECOSOC's Special Meeting on "Aftermath of recent hurricanes: Achieving a risk-informed and resilient 2030 Agenda" on 24 October 2017
In this meeting, leaders of Caribbean countries, UN officials, World Bank officials, and guest speakers, addressed the need to establish resilient housing, but also provide internally displaced people with a temporary place to live, personal hygiene kits, food, water, etc.

Previous Attempts to solve the issue

The Economic and Social Council convened a Special Meeting on "Aftermath of recent hurricanes: Achieving a risk-informed and resilient 2030 Agenda" on 24 October 2017. As the United Nations and the international community step up efforts to assist the affected countries, the ECOSOC Special Meeting aimed to highlight the economic, social and ecological dimensions

[10] "CARICOM-UN High Level Pledging Conference." #Resilient Caribbean, https://resilientcaribbean.caricom.org/.

of the recent hurricanes and earthquakes, and to enhance coordination in response, recovery, rehabilitation, reconstruction and development efforts in the aftermath.[11]

Possible solutions

Reactive:

Evacuation assistance:
Countries should be supported in executing their evacuation efforts and educated to conduct the evacuation process in the quickest, most efficient ways. Sharing of international experience and best practice and emergency planning are critical to this process.

Coordination of disaster / humanitarian relief:
Given the numerous international organizations, government agencies, NGOs that are involved in the disaster response and relief efforts, an overall coordination plan in response to hurricanes is critical, to ensure that coordinated aid has the maximum impact, that there is no duplication of effort and that funds are channelled to those activities that can have the greatest positive impact in pulling the population and the economy out of crisis as swiftly as possible.

Rebuilding efforts and access to finance:
Resources and access to finance should be coordinated to ensure rebuilding happens with the least amount of disruption to the population and the economy.

Preventative:

Resilient buildings

Construction must be undertaken with materials and technology resistant to hurricanes. While this may be costlier, in the long run it makes economic sense: according to UNDP Director for Latin America and the Caribbean Jessica Faieta, “We can save $7 for every $1 spent in resilience building”.

Education and awareness-raising related to how to react when hurricanes strike.

Building an emergency plan in hurricane response is important for every area that has a high probability of being affected by these natural disasters. This includes coordinated planning among all institutional players that are active in the hurricane response process to have clearly delineated roles and a clear understanding of the steps to be taken immediately prior to the

[11] “ECOSOC Special Meeting - Aftermath of Recent Hurricanes: Achieving a Risk-Informed and Resilient 2030 Agenda | UNITED NATIONS ECONOMIC and SOCIAL COUNCIL.” United Nations, United Nations, www.un.org/ecosoc/en/events/2017/ecosoc-special-meeting-aftermath-recent-hurricanes-and-earthquakes-achieving-risk.

onset of a storm, as well as post-storm response. Collaboration among academics, research institutes, government agencies and international organisations is deemed important for ensuring that international best practices are taken into consideration when creating a response plan, but also for ensuring that the coordination effort is clearly mapped out and well communicated to all parties that partake in the response effort.

Furthermore, there must be strong awareness-raising and education campaigns to the wide population to provide clear guidelines and instructions in steps that need to be taken, to prepare for a hurricane, to implement an evacuation plan and to deal with the aftermath. As more people are educated on how to properly respond, effects can be significantly mitigated.

Alternative sources of income to build stable economic inflows

Think tanks and business incubators can serve to generate potential ideas about alternative economic activities that can supplement those that are currently at the core of Caribbean economies —tourism, agriculture and natural resources. Developing resilient economic activity will be important to lessening the impact of such disasters.

Long-term solutions

Addressing climate change.

Given the correlation between climate change and the increased intensity of storms, as well as the evidence leading scientists to believe that the incidence of severe hurricanes will substantially increase in the second half of this century, if climate change continues, the push for strong commitment to climate change measures among the international community is more important than ever. The reinforcement of the Paris Agreement is deemed a necessary measure that has to be implemented.

Conclusion

Hurricanes cannot be avoided. However, the right combination of preventative and proactive measures can lessen their effects. Education and planning are critical to ensure that countries are well prepared for these inevitable phenomena. International coordination will potentially ensure that the right resources are channelled to the highest impact activities. Facilitating access to finance accompanied by technical assistance is important for successful rebuilding efforts, ensuring that rebuilding happens in a way that minimizes future destruction and restoring economic activity to reduce disruption to economic activity. This can help mitigate migration that results from such disasters —if people can quickly rebuild their homes and restore their livelihood, it is less likely that they will choose emigration. In the longer term, it is

important to address the root of the problem, climate change, to diminish the probability that such disasters will worsen in subsequent generations.

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