The evidence: our climate is changing

Part 1

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In this consecutive three-part series, we will give you some insights to hopefully generate some 'food for thought' as we explore and discuss (1) the science and trends of climate change, (2) the traditional definition of 'development' in our societies and (3) gaining perspective on solutions for the Caribbean.

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Our country shudders at the sound of heavy rainfall, dreading imminent and hour-long traffic jams in gridlock due to inundated, impassible roadways.

Our people are left stranded for hours or days without access to essentials or income, sometimes having fatal repercussions for those unable to take shelter amidst heavy wind and rain that sends galvanized roofing airborne, uproots trees and washes vehicles down flooded streets.

In our last severe flood of 2018, over 150,000 people were affected, including 75% of local farmers who suffered losses of crops, livestock, tractors and other equipment[1].

Beyond rainfall and floods, every year we meet new record-breaking hot temperatures. In the past decade, Trinidad and Tobago (T&T) had twice as many 'hot days' (days over 34°C) than in the 1990s, six times as many in the 1980s and 69 times as many as in the 1970s[2].

The effects of these events are countless. Floodwater washes human pollution and litter down into our waterways and endangers our wildlife; resulting traffic jams emit toxic fumes and lowers our quality of life through air pollution; heatwaves endanger the health and prosperity of our crops, which inevitably affects our food supply and security, which has downstream effects to food prices and poverty; the list goes on.

This chain of events isn't isolated to T&T. Record-breaking temperatures are causing rapid ice melt and ocean water expansion, raising sea levels around the world, and causing imminent threats to all small island developing states (SIDS) bordered by the oceans — like T&T.

Projections estimate that if the world continues on our trajectory of unabated greenhouse gas (GHG) emissions, we could be looking at average temperature increases exceeding 4°C by 2100. However, if we apply rigorous policies and regulations to reduce our emissions and achieve net zero by 2100, temperature increases could, but are not guaranteed to, cap at 1.5°C, which would mitigate the worst effects of the changing climate[3].

The coming temperature increases have strong relationships to expected rainfall. For every degree Celsius of temperature increase, we can expect up to 10% more precipitation, causing up to 40% more rainfall in T&T, worsening flooding, traffic jams, vehicle emissions, contributing to sickness and reducing quality of life.

Even with a temperature cap of 1.5°C by 2100, some projections show a roughly 1 metre sea level rise[4], rendering the coastal communities of all SIDS uninhabitable due to permanent flooding, forcing migration inwards deeper into the heart of the islands, and causing further deforestation of our already depleted tropical forests, of which T&T only has approximately 40% cover remaining.

Though human survival and wellbeing are so greatly intertwined with the health of our planet, we perceive our

1 ECLAC 2019

2 Trinidad and Tobago Weather Center, 2022

3 Intergovernmental Panel on Climate change 2022

4 NASA 2020

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actions to be far removed from the environmental damage we cause. For the severe impacts of climate change that we can expect by 2100 and in coming centuries, we can thank our own human activities.

The rate of oil and gas extraction to supply our demand for industrial and consumer products has never been seen before in history. Carbon from our earth is being transformed into carbon dioxide (CO_2) and other GHGs as a byproduct of our human activity and production.

Though GHGs play a vital role in trapping the sun's radiation in our atmosphere and keeping our planet at a livable temperature, the resulting carbon emissions from human activity has sent the very mechanism which allows our survival on earth out of equilibrium.

Scientists estimate that the ideal concentrations of CO_2 in our atmosphere should range from 300–350 parts per million (ppm). Today in 2022, we are pushing on 421 ppm, and scientists warn that CO_2 levels that exceed 430ppm can send our world into catastrophic environmental change. We are dangerously close[5].

How do we stay within that budget? According to the United Nations, global emissions must be mitigated by 43% by 2030 to have any chance of staying within the 1.5°C temperature budget[6].

On a global scale, T&T contributes a small fraction of GHG emissions. However, due to the impact of the oil and gas industry, the country has the 3rd highest CO_2 emissions per capita, per year. This equates to the average person in T&T emitting 7 times more CO_2 than that of the average global citizen per year[7]. In this context, taking action to implement domestic climate change mitigation policies is a necessity to reduce climate change impacts and assume responsibility for the country's GHG emissions.

Policies and regulations in T&T to make these emissions reductions a reality are already underway, as announced by the Ministry of Planning and Development, but that is just the first step.

The level of complexity of the issue of climate change, its resulting natural disasters and socioeconomic impacts has deep roots that can't be solved by mitigation in T&T alone.

It will take concerted effort by the public and private sectors both, along with NGOs and academic institutions to ensure that our vulnerable islands allocate resources to adapt and build resilience to the coming dangers of climate change.

Though the average Trinidadian citizen might just see a flood after a day of rain, perhaps now you can see the interconnected nature of these floods in the way we were taught to live our lives, rooted in our actions — making these natural disasters increasingly less "natural" and increasingly more humanmade.

5 MIT Climate Portal 2021

6 UN Climate Report, 2022

7 World Bank 2016

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