



The Impacts of Climate Change

In last week's article, we introduced climate change and examined some of the general observed changes in climate. This week we will look at how changes impact Guyana and the rest of the world. Last week we saw that **global temperatures** have increased by 0.74°C over the past century¹, and global **sea levels** have been rising. Further, we noticed how **precipitation patterns have changed** over the last century.

Climate change induced disruptions to natural systems have been linked to significant impacts, including disasters such as storms, hurricanes, and flooding. Further, continued warming of the atmosphere at the current rate will result in substantial damage to water resources, ecosystems, coastlines, food supplies and health.

Guyana is particularly vulnerable to the effects of climate change since approximately 90% of Guyana's population and 75% of the country's economic activities are found on the Low Coastal Plain which lies approximately 0.5 to 1 metre below mean sea level². The Coastal Plain is threatened by sea level rise, increase in storm surges and changes in rainfall patterns. Any impact here will have serious consequences for the country's economy, particularly for the agriculture, forestry and fishery sectors, which are highly sensitive to changes in climate.

In recent years, there have been extreme weather events that have resulted in high levels of flooding along the coast and in some inland areas. Notably, in January-February 2005, Guyana experienced the highest rainfall record since 1888, which resulted in the most severe flooding in the country's history. These rains were not associated with the usual weather systems affecting Guyana, but rather with influences from the southern hemisphere³. The magnitude of the damages caused by the floods was estimated to be equivalent to 59% of the country's Gross Domestic Product (GDP) for the year 2004.

¹ IPCC 2007, *Fourth Assessment Synthesis Report*, accessed at:
http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html

² Second National Communication to the UNFCCC 2012 accessed at:
[http://www.undp.org.gy/web/documents/bk/Min%20of%20Agri_SNC_Aug%20\(07\).pdf](http://www.undp.org.gy/web/documents/bk/Min%20of%20Agri_SNC_Aug%20(07).pdf)

³ ECLAC 2005, *Guyana Macro-Socio Economic Assessment of the Damage and Losses Caused by the January-February 2005 Flooding*, accessed at :<http://www.gina.gov.gy/eclac.pdf>

More recently in 2011, continuous heavy rainfall in Region 9 and in the Roraima State of Brazil caused overflow in the Rio Branco, Ireng and Takutu Rivers, which resulted in severe flooding in Lethem, its environs and other low lying areas of Region 9⁴.

Moreover within the last century, Guyana has experienced an increase of 1.0°C of the mean annual temperature. It is projected that by the end of this century, temperatures can increase by up to 4°C and weather patterns will become more extreme. Sea level is projected to rise at a rate of 1cm/year, about 40cm-60cm by the end of the 21st century⁵.

These projected changes may translate into ecosystems disruptions, floods, landslides, storm surges and droughts, among other impacts. These threats will impose severe social and economic constraints to Guyana and would need to be addressed with effective adaptation measures, which the Government is undertaking such as improvements to drainage and irrigation; rehabilitation of sea defences and disaster risk management.

The Hydrometeorological Service, a department of the Ministry of Agriculture (MoA), is responsible for monitoring and evaluating the weather and water resources in Guyana. The department continues to observe and archive Guyana's weather and climate and provide meteorological information. New projects and initiatives have been implemented including a Doppler digital radar, which was set-up to improve weather monitoring and forecasting in Guyana.

The National Drainage and Irrigation Authority (NDIA), also within MoA, continues to monitor the D&I systems in Guyana and ensure all measures are taken to mitigate the effects of the heavy rainfall.

Further, the Civil Defence Commission (CDC), the national disaster management organisation in Guyana, has embarked on a Comprehensive Disaster Management (CDM) programme, which will outline appropriate measures making Guyana better prepared to handle disasters and lessen our vulnerability to disasters that are repeated such as flooding.

Additionally, priority projects on adaptation is outlined within Guyana's Low Carbon Development Strategy (LCDS), which is an innovative strategy that seeks to merge the fight against climate change while simultaneously encourage economic development.

The LCDS will support the upgrading of infrastructure and assets to protect against flooding through urgent, near-term measures. Specifically, the LCDS Update, which was launched this year, identified the project area 'Climate Resilience, Adaptation and Water Management Initiatives' for which up to USD 100 million will be allocated to improve Guyana's capacity to address climate change. This along with other initiatives and projects within the LCDS will be explained in detail in a future article.

⁴ Civil Defence Commission 2011, *Situation Report # 6*, accessed at http://www.cdc.gy/index.php?option=com_joomdoc&view=docman&gid=43&task=cat_view&Itemid=66>

⁵ Second National Communication to the UNFCCC 2012 accessed at [http://www.undp.org.gy/web/documents/bk/Min%20of%20Agri_SNC_Aug%20\(07\).pdf](http://www.undp.org.gy/web/documents/bk/Min%20of%20Agri_SNC_Aug%20(07).pdf)>

Next week's article will feature, in detail, the projected impacts of climate change in Guyana that will likely occur if measures are not put in place. Models used to project climate change impact will also be featured.

Prepared by the Office of Climate Change

For additional information, please contact:
Office of Climate Change, Office of the President
Shiv Chanderpaul Drive, Georgetown
Tel. 223-5205
Email: info@lcds.gov.gy
Website: www.lcds.gov.gy