CLIMATE CHANGE IN THE CARIBBEAN

As the world moves to implement the Paris Climate Change Agreement, the Caribbean - one of the most vulnerable regions to rising sea levels - faces a host of challenges, including accessing funding for adaptation and mitigation, protecting key sectors like tourism and agriculture, building resilience to natural disasters, and moving to a low-carbon development path.

Much of the world's most interesting work in addressing climate change, adopting clean energy and coming up with plans to stem deforestation has its roots in the developing world, where climate change impacts are often felt first and strongest.

In collaboration with the German Agency for International Cooperation (GIZ) and the Caribbean Public Health Agency (CARPHA), IPS looks at the wide range of local, national and regional initiatives in the Caribbean that offer creative solutions to these problems.

Caribbean Aqua-Terrestrial Solutions

german cooperation
DEUTSCHE ZUSAMMENARBEIT

CARICOM

giz

CARPHA

Mixed Signals as Guyana Develops its Green Economy Strategy

BY JEWEL FRASER

Guyana is forging ahead with plans to exploit vast offshore reserves of oil and gas, even while speaking eloquently of its leadership in transitioning to a green economy at a recent political party congress addressed by the country's president.

The mixed signals on plans for a green economy have increased in the past year, in the wake of a 2015 discovery of what has been termed one of the largest discoveries of oil and gas 120 miles off Guyana's shores, which saw major international oil companies vying for exploration rights even as the government began work on a Green State Development Strategy.

Central to the Green State Development Strategy (GSDS) is "the structural transformation of Guyana's economy into a green and inclusive one [that] will recognise the economic value of the extractive sectors, instituting measures to ensure their environmental sustainability while facilitating new economic growth from a more diverse set of inclusive, green and high value-adding sectors."

In line with its goal to transition to a green economy, Guyana entered into a seven-year partnership with Norway for a REDD+ investment fund, on the basis of its 19 million hectares of forest with a carbon sink capacity of 350 tons/hectare, in what it described as "the world"s first national-scale, payment-for-performance forest conservation agreement." The USD250 million investment fund from Norway is earmarked for pioneering Guyana's Low Carbon Development Strategy.

At the same time, government agencies of this small South American country, the only English-speaking one on the continent, gave some assistance to the International Labour Organisation (ILO) as it researched the most effective measures for ensuring the Guyanese labour force developed the skills needed in a green economy.

The ILO agreed to respond to IPS' queries about the seeming paradox of Guyana exploiting its fossil fuel reserves while making plans for a green economy, whereas repeated efforts by the IPS to obtain an interview with Guyana's Office of Climate Change were unsuccessful.

Andrew Small, the consultant commissioned by the ILO to carry out the study on greening Guyana's labour force, told IPS via e-mail that he thinks the country is indeed ready and positioning itself for a green economy. He pointed to changes in the education curricula at both secondary school and tertiary level, as well as efforts at encouraging climate smart agriculture. "Guyana is indeed a small country but a major contributor to the global effort to reduce carbon emissions from economic and social activities," he said.

He also pointed out the move by some large businesses to incorporate renewable energy into their buildings and processes, and an attendant move by the government to enable further uptake of renewable energy. "In particular the Guyana Energy Agency and Guyana Power and Light Company are leading the final draft and implementation of the Draft Guyana Energy Policy (2017) and Guyana Energy Sector Strategic Plan (2015-2020), respectively. These policies outline anticipated energy demand, an optimal energy mix for Guyana including a 100 percent increase in

renewable energy sources aligned to Guyana's transition to an environmentally sustainable economy," he said.

However, with an estimated four billion barrels of oil in its waters, the pull of oil money has been creating a shift in focus for some who might potentially have taken up working in green jobs. Small admits, "The shift is already happening. The magnitude of this sector will attract many highly skilled Guyanese. There have been some local concerns expressed about this, in particular in the case of engineers from the Public Infrastructure Ministry or [with regard to those] who would otherwise seek employment with this Ministry among others."

Apart from labour market concerns, it remains to be seen how Guyana will live up to its Nationally Determined Contributions tabled last year. The country promised "to avoid emissions in the amount of 48.7 MtCO2e annually if adequate incentives are provided", on the basis of its forest cover. If the four billion barrel estimate given is correct, Guyana's reserves alone represent almost four-fifths of the Intergovernmental Panel on Climate Change's 2007 estimate of the amount of energy that will be generated by Latin America's industrial sector including its fossil fuel industry in the years leading up to 2030. The IPCC estimates the approximately 33 EJ of energy (roughly equivalent to 5.4 billion barrels of oil) Latin America will generate up to 2030 will result in 2,417 MtCO2 emissions, making Guyana's promises in support of the Paris Agreement inconsequential in the light of emissions its billions of barrels would produce.

Still, the ILO Caribbean's Enterprise and Job Creation Specialist Kelvin Sergeant told IPS that the impact of oil and gas exploration on the green transition could go either way. "It can be positive or negative. Positive if the resources from the oil sector are used to develop the green economy and ensure sustainability of the environment and the rest of the society, especially the more vulnerable in the society. If this is not done, then there could be many new problems in the future."

The ILO commissioned the "Skills for green jobs" in Guyana study, which was completed in 2017, because his organisation believes a green economy is a sustainable one. "The ILO places great emphasis on greening of the economy and green jobs. This is critical towards sustainable economies and societies," Sergeant said.

"The ILO, however, argues that policies towards greening of the economy will have an impact on workers. There will be job losses, job gains or jobs will be redefined. Because of this, the ILO believes that any policy towards greening of the economy should be just and fair and must leave no one behind."

The focus on fossil fuels "can be only detrimental if there is no trickling down of the gains from the oil sector The whole process has to be carefully managed to avoid Dutch disease and other problems which have plagued Caribbean countries that have oil," he said. "There needs to be careful policies which ensure that everyone benefits from the oil finds."

But Sergeant remains upbeat about the future of Guyana's green economy. He said the focus on fossil fuel exploration does not mean efforts to promote green skills for a green economy are pointless. "It does not have to, if the guidelines for a just transition are followed."

Why the Flooding in Grenada is a Clear Reminder of its Vulnerability to Climate Change

BY DESMOND BROWN

Grenada is still tallying the damage after heavy rainfall last week resulted in "wide and extensive" flooding that once again highlights the vulnerability of Small Island Developing States (SIDS) to climate change.

Officials here say extreme weather events like in 2004 and 2005 are still fresh in the minds of residents. Rising sea levels are leading to an erosion of coastlines, while hurricanes and tropical storms regularly devastate crucial infrastructure.

For three hours, between 9 am and 12 noon on Aug. 1, a tropical wave interacting with the Inter-Tropical Convergence Zone, lingered over the island, dumping several inches of rain, which resulted in rapidly-rising flood waters.

The Maurice Bishop International Airport Meteorological Office recorded six inches of rain over the three-hour period, and officials said the interior of the island received significantly more rainfall. No recording of the island's interior was immediately available.

"The flooding was wide and extensive," senator Winston Garraway, minister of state in the ministry of climate resilience, told IPS.

"St. David and St George [parishes] were badly impacted and we have decided that both areas will be disaster areas."

In St. David, Garraway said there were 60 landslides, and these have impacted on the road network in the parish which is the country's main agriculture zone.

A total of nine homes in both parishes have been badly affected and families had to be relocated, Garraway said, adding that disaster officials are looking at either demolishing and rebuilding or relocating homes.

"The national stadium took a bad beating from the flood waters and this is likely to impact on activities going forward in the immediate future," Garraway said.

Damage to the ground floor of the stadium also led to the postponement of one of the main carnival events.

Garraway, who also has responsibility for the environment, forestry, fisheries and disaster management, said the weather event was another clear remainder that Grenada and other SIDS are among the countries most vulnerable to climate change.

"We have been one of the strong proponents of the impact of climate change, so we've been training our people as it relates to mitigation measures. But we had so much rain over such a short period, the whole system was inundated, and it speaks clearly to the effects of climate change," he said.

"One might ask, was there any chance of us mitigating against some of these challenges that we have seen? In some sense, I think yes, in a large sense, no. The system could not have absorbed the amount of water we had that short time."

The minister of communication, works and public utilities, Gregory Bowen, agrees with Garraway that events like these highlight the effects of climate change on SIDS.

Bowen said there is an urgent need for grant financing

to help at the community level.

"A lot of the flood waters passed through private lands. The state is responsible for state properties, but for private people, the size of drains that would have to run through their properties, they can't afford it," Bowen told IPS.

"So that is one area that we have to work on, getting granting financing to help the people. Because the rains come, and it will find its own path and it's usually through private lands. If you have good drains you could properly channel the run off.

"So that is one critical component that we have to move on immediately. Millions of dollars are needed to be spent on that," Bowen added.

But he said the island simply cannot afford to cover these costs, noting that Grenada only recently concluded a three-year, International Monetary Fund supported Structural Adjustment Programme.

While the formal impact assessment is still being done by the ministry of works in collaboration with the ministry of finance, officials here have already reached out to regional partners for support.

Garraway said officials at the Barbados-based Caribbean Disaster Emergency Management Agency, have been in touch with local disaster management officials to ascertain the extent of the damage and the immediate assistance needed.

Meanwhile, epidemiologist in the ministry of health, Dr. Shawn Charles, has advised residents to stay away from the stagnant water resultant from the flooding. He warned that they may not only be contaminated with debris such as broken bottles and plastics, but pathogens that can cause life-threatening conditions.

"Flood water from the level of rainfall we received from that tropical wave is normally contaminated with all kinds of things and it's not wise for anyone to expose themselves to it. There are all kinds of contaminants that can impact differently, so swimming, running and doing other things in that type of contaminated water should be avoided," Charles told IPS.

"One of the life-threatening contaminants in flood water is droplets and urine from rats and that is the main transmitter for leptospirosis, and that disease can cause death. So, it's not advisable for a person to just go about exposing themselves to flood water. It is just not wise; it can result in sickness. People need to be very cautious. Personal contact with flooded water should be avoided."

Caribbean Builds Resilience Through Enhanced Data Collection

Meteorologists and hydro-met technicians assemble one of the 40 Automatic Weather Stations being installed by the Caribbean Community Climate Change Centre with funding from the USAID Climate Change Adaptation Program

BY ZADIE NEUFVILLE

By the end of September 2018, the Caribbean Community Climate Change Centre (CCCCC) would have installed the last of five new data buoys in the Eastern Caribbean, extending the regional Coral Reef Early Warning System (CREWS) network as it continues to build resilience to climate change in the Caribbean.

At the same time, the centre is also installing an additional 50 Automatic Weather Stations (AWS) across nine countries to expand the existing network of hydro-meteorological stations- yet another push to improve data collection in the region. The data will help scientists to better evaluate potential risks and impacts, and provide the information national leaders seek to build more resilient infrastructures to mitigate climate risks.

Enhancing the data collection and availability is central to the centre's mandate to prepare the Caribbean's response to climate change, Dr Ulric Trotz science advisor and deputy executive director told IPS.

He noted: "Experts here are using the critical data they collect, to enhance models, design tools and develop strategies to mitigate and build resilience to the devastating impacts – rising seas, longer dry spells, more extreme rainfall and potentially higher impact tropical cyclones – associated with climate variability and change."

Reporting in "Volume 1 of the Caribbean Climate Series," released ahead of the 23rd Conference of the Parties of the United Nations Framework Convention on Climate Change in Germany in 2017, researchers at the University of the West Indies Climate Studies Group, Mona Campus, Jamaica, pointed out that the Caribbean is already experiencing the impacts associated with changes in climatic conditions.

According to the report, nights and days are warmer; air and sea surface temperatures are higher and there are longer and more frequent periods of droughts. Not surprisingly, after the 2017 hurricane season, researchers also reported increasing intensity in rainfalls and more intense hurricanes with stronger winds and lots more rain.

"Even if global warming beyond the 1°C already experienced were limited to only a further half a degree, there would still be consequences for the Caribbean region," the report said.

Trotz explained: "These data gathering systems, which were acquired with funding from the USAID Climate Change Adaptation Programme, are increasing the volume of real-time data and enhancing the reliability and accuracy of weather and climate forecasting in the region".

In addition to the super computers installed at CCCCC's Belize location, the University of the West Indies' Mona Campus and Caribbean Institute for Meteorology and Hydrology (CIMH)-under previous projects- the newly installed data points, are already enhancing the capacity of regional scientists to monitor and process the atmospheric and other environmental variables that are affected by the changes in climatic conditions.

The data collection efforts support evidence-based decision-making, and improve the accuracy of the projections from the regional and global climate models while building the region's resilience to the impacts of climate variability and change. In the end, the information provided in the 1.5 Report which will form part of Intergovernmental Panel on Climate Change global assessment report AR6 as well as all other Caribbean forecasts and models promises to be more accurate and reliable.

"The data collected from these stations forms the baseline for all climate modelling, ensuring that we have a good baseline data to suffice our regional climate services models for regional forecast and predictions. The network strengthens the baseline for climate change projection models thereby increasing the confidence in the results that are used in the decision-making for climate change mitigation and adaptation," Albert Jones, instrumentation technician at the 5Cs, told IPS.

The retired weather forecaster explained, that the new AWS are not only improving data collection, they are also expanding the capability and roles of local Met Offices from their historic roles of providing information for primarily aviation purposes.

The importance of these systems cannot be understated, particularly in countries like Guyana and Suriname where deficiencies in the data seriously hampers the coverage of areas with significant differences in the topography and climatic conditions. This is especially significant where comparisons of hinterland and elevated forested areas to the low-lying coastal flood plains are critical to development of lives and property.

The centre, which celebrates its 14th year of operation in July 2018, has worked with several donors over its existence to improve the collection of data in a region that largely depended on manual systems and where historical data has been hard to come by. The latter is an essential input for validation of the regional models required for the production of region-specific climate scenarios, which are utilised in impact studies across all of the affected sectors in the region. These in turn form the basis of crafting the adaptation responses required to build climate resilience in specific sectors.

Popularly known as the 5Cs, the climate change centre carries out its mandate through a network of partners including government meteorologists, hydrologists, university professors and researchers. Scientists and researchers in Universities across the region and at specialist institutions like the Barbados-based CIMH, do the data crunching.

"We are building climate and weather early warning systems to build resilience, so it is important that we collect and turn this data into useful information that will benefit the society," CIMH's principal Dr David Farrell told hydro-met technicians at a USAID sponsored training on the grounds of the institute in March.

He noted that in designing the system, the CIMH- that has responsibility for maintaining the network- identified and reduced existing deficiencies to improve the quality of data collected.

And as global temperatures continue to soar, the World Meteorological Organisation 2018 report noted that 2017 was "was one of the world's three warmest years on record."

It said: "A combination of five datasets, three of them using conventional surface observations and two of them re-analysis, shows that global mean temperatures were 0.46 °C ± 0.1 °C above the 1981–2010 average, and about 1.1 °C ± 0.1 °C above pre-industrial levels. By this measure, 2017 and 2015 were effectively indistinguishable as the world's second and third warmest years on record, ranking only behind 2016, which was 0.56 °C above the 1981−2010 average."

With studies pointing to a warmer Caribbean and an increase in the frequency of extreme events, regional scientists are committed to improving the way they use data

to guide governments on the actions that will lessen the expected impacts. In 2017, extreme weather events in the form of Hurricanes Irma and Maria claimed lives, destroyed livelihoods and infrastructure, throwing islands like Barbuda, Dominica and the Virgin Islands back several decades.

In identifying extreme weather events as "the most prominent risk facing humanity", the World Economic Forum's Global Risks Report 2018 noted: "Fuelled by warm sea-surface temperatures, the North Atlantic hurricane season was the costliest ever for the United States, and eradicated decades of development gains in small islands in the Caribbean such as Dominica. Floods uprooted millions of people on the Indian subcontinent, whilst drought is exacerbating poverty and increasing migration pressures in the Horn of Africa."

The CREWS network is part of a global system to improve the monitoring and management of coral reefs as environmental and climatic conditions increases coral bleaching and death. The centre works in collaboration with the National Oceanic and Atmospheric and Administration to install monitoring stations that collect data on climate, marine and biological parameters for use by scientists to conduct research into the health of coral reefs in changing climatic and sea conditions.

Under previous funding arrangements, CREWS stations were also installed in Belize, Barbados, Jamaica, Trinidad and Tobago, the Dominican Republic, as well as other parts of the region.

The humble CREWS buoy hosts several instruments designed to measure conditions above and below the water, and keep track of these developing threats.

When Salt Water Intrusion is Not Just a Threat But a Reality for Guyanese Farmers

BY JEWEL FRASER

Mikesh Ram would watch his rice crops begin to rot during the dry season in Guyana, because salt water from the nearby Atlantic Ocean was displacing freshwater from the Mahaica River he and other farmers used to flood their rice paddies.

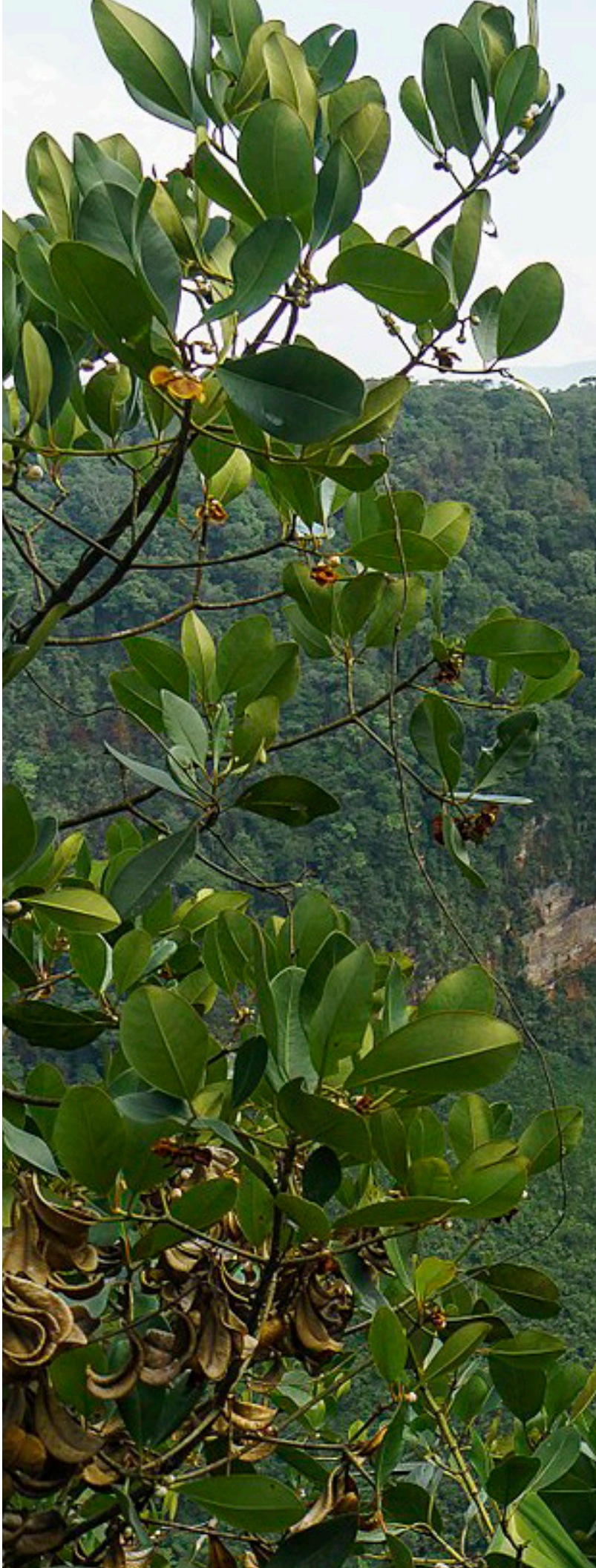
The intrusion of salt water into the rice paddies had been happening off and on for the past 10 years, and he, like many other rice farmers in Regions 4 and 5 of Mahaica, Guyana, had sustained periodic financial losses due to the ocean overtopping the 200-year-old sea walls erected as barricades to the sea. And while 2015 was an unusually good year for Guyana's rice harvest, the following year, 2016, saw a 16 percent drop in production.

Though the fall-off in production that year could not entirely be attributed to the salt water intrusion, expert sources say this was part of the problem. The United States Department of Agriculture Foreign Agricultural Service's Commodity Intelligence Report notes that reduced rice production "was due to myriad problems including drought, water rationing, salt water intrusion, lack of crop rotation, less fertiliser input, and slower and lower returns to farmers." It added that for the first rice crop of 2016, "about 20 percent was affected by drought and another 15 percent had salt water intrusion on fields."

The rice-growing regions of Demerara-Mahaica and Berbice-Mahaica are particularly vulnerable to the impacts of climate change, located as they are six feet below sea level on Guyana's Atlantic north coast.

Heetasmin Singh, who completed a master's degree at the University of Guyana, presented a paper on the subject at the just concluded Latin America and Caribbean Congress for Conservation Biology, held Jul. 25-27 at the St. Augustine campus of the University of the West Indies, Trinidad. Following her presentation, she told IPS via e-mail of some of the concerns farmers in the region have.

She said, "Farmers have been reporting salt water intrusion for a number of years, maybe as much as 10 years



Kaieteur Falls, Guyana.
Guyanese farmers have been reporting salt water intrusion for a number of years. This especially happens during periods of drought and in those regions where irrigation water is sourced from rivers and creeks which drain into the Atlantic Ocean.

(or more) in certain regions of the country. This especially happens during periods of drought and in those regions where irrigation water is sourced from rivers and creeks which drain into the Atlantic Ocean (as opposed to a water conservancy or catchment)… the salt water intrusion is not just a threat, it is a reality for many of them."

while protecting areas through levees from unseasonably heavy rains which could flood or erode land. To help the agricultural sector, starting in January 2016, Guyana's National Drainage and Irrigation Authority (NDIA) water authorities begin pumping available water into the drier conservancies."

> "The knowledge of the [agricultural] extension officers in mitigating and adapting to the salt water intrusion is questionable, however, but a real education and awareness campaign should start with these officers who interact with farmers more frequently."

Farmer Mikesh's son, Mark Ram, is a colleague of Singh as well as a scientific officer at the Centre for the Study of Biological Diversity at the University of Guyana. He told IPS that salt water intrusion normally occurs during the dry season when there is less fresh water because the rains have not fallen. He said the salinity had one of two effects on growing rice plants: it could either kill them or slow down their rate of growth,

"Usually, [salt water] affects the plant when they have just been planted because…we are required to flood the fields. So what we would do, we usually wait until it rains a bit, then flood the fields and add fertiliser. Then we release the water and then try to flood it again. It is at this time [when] the water becomes saline because the rain has not fallen that it affects the crop, it kills out the rice fields." On the other hand, he said, "it can delay harvesting time because the rice is not going to grow as fast as it should."

Sometimes, he said, "there is actual rotting of the plant" due to the water's salinity.

To counteract the problems caused by salt water intrusion, farmers in the Mahaica region rely on fresh water supplies from the National Drainage and Irrigation Authority. According to the USDA Commodity Intelligence Report, Guyana is "divided into water conservancy regions, [and] has developed an irrigation and dike infrastructure to help farmers use supplemental irrigation from reservoirs

"Farmers ask the NDIA to release some of the fresh water from the major reservoirs," Ram said. "Once they receive this it reduces the salinity so that the water becomes usable." However, no other adaptation or mitigation measures had so far been implemented by farmers, he said.

Singh noted via e-mail that "the knowledge of the [agricultural] extension officers in mitigating and adapting to the salt water intrusion is questionable, however, but a real education and awareness campaign should start with these officers who interact with farmers more frequently."

She added, "Many farmers I interviewed saw the effects of the soil salinisation on their crops but many were not familiar with the term climate change or were not adapting best practices for ameliorating soil salinisation. They instead sought to solve their low crop yields issues with more fertilisers which would end up doing more harm than good for the crops."

However, she notes that some will flush their fields and allow water and the salts to percolate through and past the root zone of the crops. Others will ensure their soils are deep ploughed to ensure faster percolation of salts past their crop root zone. With sea level rises for Guyana projected to rise anywhere from 14 cm to 5.94 metres in 2031; from 21 cm to 6.02 metres in 2051; and from 25 cm to 6.19 metres in 2071, the need for proactive adaptation and mitigation measures becomes ever more urgent.

Building the Caribbean's Climate Resilience to Ensure Basic Survival

BY DESMOND BROWN

In 2004, when the Category 4 hurricane Ivan hit the tiny island nation of Grenada and its 151 mph winds stalled overhead for 15 hours–it devastated the country. But not before pummelling Barbados and other islands, killing at least 15 people.

And again last year, the destruction left behind in several Caribbean islands by Hurricanes Irma and Maria once again highlighted the vulnerability of these island countries.

It has also emphasised the need for a strong natural resource base to protect and make communities and ecosystems more resilient to the impacts of climate change, which are expected to become even more severe in the future.

"Building the region's resilience to climate change, natural hazards and environmental changes is not only a necessary and urgent development imperative, but it is also a fundamental requirement to ensure our basic survival as a people," Grenada's prime minister Dr. Keith Mitchell told IPS.

"We have no choice as a region but to pursue climate-smart development, as we forge ahead to build a climate-resilient Caribbean."

Grenada is among 10 Caribbean countries getting help from the Global Environment Facility (GEF) to address water, land and biodiversity resource management as well as climate change.

Under the five-year Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (GEF-IWEco Project), countries are implementing national sub-projects at specific sites in order to enhance livelihood opportunities and socio-economic co-benefits for targeted communities from improved ecosystem services functioning.

Project sites include the upper reaches of the Soufriere Watershed in Saint Lucia, the Cedar Grove and Cooks Watershed areas and McKinnons Pond in Antigua, and the Negril Morass in Jamaica.

"Adjusting to the new normal requires comprehensive and coordinated efforts to mainstream climate change considerations in development planning," Mitchell said.

"In practice, this will require a shift in focus, from sustainable development to climate-smart sustainable development."

In addition to Grenada—Antigua & Barbuda, Barbados,

Cuba, Dominican Republic, Jamaica, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago —are also participating in the project, which also aims to strengthen policy, legislative and institutional reforms and capacity building.

Half of the 10 countries — Antigua and Barbuda, Grenada, St. Kitts and Nevis, Saint Lucia, and; St. Vincent & the Grenadines — belong to the sub-regional grouping, the Organisation of Eastern Caribbean States (OECS). Their participation in the project is being funded by the GEF to the tune of USD20 million.

IWEco is being co-implemented by United Nations Environment and the U.N. Development Programme and co-executed by U.N. Environment's Caribbean Regional Coordinating Unit (U.N. Environment CAR RCU), which is the Secretariat to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (the Cartagena Convention).

All OECS countries are signatories to the Cartagena Convention, a comprehensive, umbrella agreement for the protection and development of the marine environment.

Fresh and coastal water resources management, sustainable land management and sustainable forest management are all challenges to Caribbean SIDS, and more so as the region's economies face numerous demands and, inevitably, another hurricane season.

Addressing these challenges while improving social and ecological resilience to the impacts of climate change are objectives of the IWEco Project.

Stating that storms and hurricanes do not have to result in catastrophic disasters, Mitchell said in too many instances in the region this has been the case because of the prevailing susceptibilities of communities.

"We have seen first-hand how poverty and social weaknesses magnify natural disasters. This need not be the case," he said.

"We must redouble our efforts to improve the conditions for the most vulnerable in our societies so that they are empowered and supported to manage disasters and climate risks."

Grenada, along with all participating countries, will benefit from regional project activities aimed at strengthening policy, legislative and institutional frameworks, strengthening monitoring and evaluation, and public awareness.

At a recent meeting in Montserrat, the regional coordinator of the Cartagena Convention, Dr. Lorna Inniss noted that since the particularly destructive hurricane season of 2017, perhaps even as a consequence of it, the trend in the region towards consolidating several related areas of responsibility into single ministries seems to have grown.

Grenada, for instance, now has the combined ministry of climate resilience, the environment, forestry, fisheries, disaster management and information. Dominica now has the ministry of environment, climate resilience, disaster management and urban renewal.

> "We have seen first-hand how poverty and social weaknesses magnify natural disasters. This need not be the case."

The most recent projections in climate research all anticipate a significant increase in the frequency and/or intensity of extreme weather events, as well as slow onset climate-related changes, such as sea-level rise, less rainfall and increased sea surface temperatures.

These impacts can disrupt Grenada's economy and critical economic sectors like agriculture and tourism and damage critical infrastructure and personal property.

The findings of a regional study concluded that climate change has the potential to increase the overall cost to local economies by one to three percent of GDP by 2030 in the Caribbean. It also alters the risk profile of the islands by impacting local sea levels, hurricane intensity, precipitation patterns and temperature patterns.

According to the Caribbean Catastrophe Risk Insurance Facility (CCRIF), in absolute terms, expected losses may triple between 2010 and 2030. Climate change adaptation is therefore critical for the economic stability of the tri-island state.

"Charting a course to 2030 is even more an urgent requirement as the impacts of climate change are increasingly affecting CCRIF's Caribbean and Central American member countries," CCRIF CEO, Isaac Anthony said.

Urgent Action Needed to Safeguard Saint Lucia's Biodiversity

BY DESMOND BROWN

Wildlife conservationists consider it to be one of the most striking parrots of its kind. Saint Lucia's best-known species, the endangered Amazon parrot, is recognised by its bright green plumage, purple forehead and dusty red-tipped feathers. But a major conservation organisation is warning that climate change and a lack of care for the environment could have devastating consequences for Saint Lucia's healthy ecosystems and rich biodiversity, including the parrot.

Sean Southey chairs the Commission on Education and Communication (CEC) of the International Union for Conservation of Nature (IUCN).

He told IPS that urgent action is needed to safeguard the eastern Caribbean island nation's biodiversity, which is under constant threat.

"With climate change, countries like St. Lucia [experience] significant weather events. The increase in hurricanes, the increase in bad weather and mudslides – these are incredible consequences of climate change," Southey said.

Though less than 616 square kilometres in area, St. Lucia is exceptionally rich in animals and plants. The island is home to more than 2,000 native species, of which nearly 200 species occur nowhere else.

Other species of conservation concern include the pencil cedar, staghorn coral and St. Lucia racer. The racer, confined to the nine-hectare island of Maria Major, is thought to be the world's most threatened sake.

Also at risk are mangrove forests and low-lying freshwater wetlands, Southey said.

But he said it was not too late to take action, and he urged St. Lucia and its Caribbean neighbours to take advantage of their small size.

"The smallness of islands allows for real society to get involved. What it means is helping people connect to the environment," Southey said.

"It means that they need to know and feel and appreciate that their individual behaviours make a difference. Especially the biodiversity decisions [like] land use planning. If you are going to sell your family farm, do you sell for another commercial tourist resort, do you sell it to make a golf course or do you sell it to [produce] organic bananas? These are the type of individual decisions that people have to make that protect an island or hurt an island," he said.

Southey added that thoughtful management of mangroves and effective management of shorelines, "can create natural mechanisms that allow you to cushion and protect society from the effects of climate change."

The CEC chair said recent extreme weather events have forced people in the Caribbean to understand climate change more than inhabitants from other countries in the world do.

"If you're over the age of 30 in the Caribbean, you've seen a change in weather patterns. It's not a story that you hear on the news, it's a reality that you feel during hurricane season every year. So I believe there is an understanding," he said.

In September 2017, Hurricane Irma tore through many of St. Lucia's neighbouring islands, including Barbuda.

The category five hurricane wreaked havoc on Barbuda's world-famous frigate bird colony. Most of the 10,000-frigate bird population disappeared in the immediate aftermath of the hurricane that destroyed the mangroves in which they nest and breed.

While many countries in the Caribbean are working on building natural barriers and nature-based solutions in response to climate change, Southey still believes there needs to be a greater strengthening of that sense that people can actually do something to contribute.

Reducing plastic waste

In June 2016, Antigua took the lead in the Caribbean with a ban on the commercial use of plastic bags.

The island's environment and health minister Molwyn Joseph said the decision was made in a bid to reduce the volume of plastic bags that end up in the watercourses and wetlands.

"We are giving our mangroves a fighting chance to be a source of healthy marine life, that can only benefit us as a people," he said.

Antigua also became the first country within the Organisation of Eastern Caribbean States and the second within the Caribbean Community, to ratify the Nagoya Protocol to the Convention on Biological Diversity (CBD).

The Nagoya Protocol provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilisation of genetic resources.

On Jul. 3 this year, one of the Caribbean's largest supermarket chains launched a campaign to discourage the use of single use plastic bags for bagging groceries at its checkout counters, while actively encouraging customers to shop with reusable bags as a more eco-friendly option.

Managing director of Massy Stores St. Lucia Martin Dorville said the company is focused on finding more permanent solutions to reducing plastic waste and its own demand for plastic bags.

He said the decision to encourage customers to use less plastic was bold, courageous and will help manage the adverse impacts of single use plastic on the environment.

"I am very thrilled that one of the number one supermarkets has decided to ban all plastic bags. It's a small behaviour but it helps everyone realise that their individual actions make a difference," Southey told IPS.

"As you drive across the landscape of St. Lucia, you see a landscape strewn with old plastic bags, so I was very appreciative of that. But what I really liked is that when I spent over USD100, they gave me a recyclable bag as a bonus to encourage me to use that as an individual so that my behaviour can make a difference," he said.

He added that if school children could understand the importance of mangroves and complex eco-systems and the need to protect forests, wildlife and endangered birds "then I think we can make a huge difference."

St. Lucia is exceptionally rich in animals and plants. The island is home to more than 2,000 native species, of which nearly 200 species occur nowhere else.

Strengthening Cuban Coastal Landscape in the Face of Climate Change

BY IVET GONZÁLEZ

Strong winds agitate the sea that crashes over Punta de Maisí, the most extreme point in eastern Cuba, where no building stands on the coast made up of rocky areas intermingled with vegetation and with sandy areas where people can swim and sunbathe.

A little inland, a white, well-kept lighthouse rises 37 metres above sea level. Standing there since 1862, it is an icon of the municipality of Maisí, in the province of Guantánamo, in the east of this Caribbean island nation of 11.2 million inhabitants.

"Occasionally there's a cyclone. Matthew recently passed by and devastated this area," said Hidalgo Matos, who has been the lighthouse keeper for more than 40 years.

Matos was referring to the last major disaster to strike the area, when Hurricane Matthew, category four on the one to five Saffir-Simpson scale, hit Guantánamo on Oct. 4-5, 2016.

Thanks to this rare trade, which has been maintained from generation to generation by the three families who live next to the lighthouse, the 64-year-old Matos has seen from the privileged height of the tower the fury of the sea and the winds from the hurricanes that are devastating Cuba and other Caribbean islands, more and more intensely due to climate change.

"One of the benefits of the area is that the majority of the population makes a living from fishing," said the lighthouse-keeper.

This is the main reason why coastal populations are reluctant to leave their homes by the sea, and even return after being relocated to safer areas inland.

Facing this and other obstacles, the Cuban authorities in the 1990s began to modify the management of coastal areas, which was accelerated with the implementation in 2017 of the first government plan to address climate change, better known as Life Task.

Currently, more than 193,000 people live in vulnerable areas, in conditions that will only get worse, as the sea level is forecast to rise 27 centimetres by 2050 and 85 centimetres by 2100.

The relocation of coastal communities and the restoration of native landscapes are key to boosting resilience in the face of extreme natural events.

Scientists say that natural elements of coastal protection such as sandy beaches, sea grasses, reefs and mangroves cushion the tides.

Of the country's 262 coastal settlements, 121 are estimated to be affected by climate change. Of these, 67 are located on the north coast, which was affected almost in its entirety by the powerful Hurricane Irma in September 2017, and 54 are in the south.

In total, 34,454 people, 11,956 year-round homes, 3,646 holiday homes and 1,383 other facilities are at risk.

Cuban authorities reported that 93 of the 262 coastal settlements had been the target of some form of climate change adaptation and mitigation action by 2016.

Measures for relocation to safer areas were also being carried out in 65 of these communities, 25 had partial plans for housing relocation, 22 had to be completely relocated from

the shoreline, and another 56 were to be reaccommodated, rehabilitated and protected.

"There are no plans to move any settlements or people in the municipality because after Cyclone Matthew everything was moved," said Eddy Pellegrin, a high-level official in the government of Maisí, with a population of 28,752 people who depend mostly on agriculture.

"Since 2015 we have been working on it. From that year to 2017, we relocated some 120 people," he said in an interview with IPS in Punta de Maisí.

A total of 840 people live along the 254 km of coastline in this municipality, "who are not in dangerous or vulnerable places," the official said, discussing the national programme to manage the coastal area that Maisí is preparing to conclude with a local development project.

Hidalgo Matos is the keeper of the lighthouse located in Punta de Maisí at the eastern tip of Cuba, in the province of Guantánamo. From his watchtower, he has witnessed the effects of climate change – the increasingly recurrent and extreme natural events.

"There is no need to make new investments in the coastal area, what remains is to plant sea grapes (Coccoloba uvifera) to increase production," he said of a local development project that consists of planting these bushes typical of the beaches, to restore the natural protective barrier and produce wine from the fruit.

Punta de Maisí and Boca de Jauco are the areas to be reforested with sea grape plants.

Pellegrin added that coconut groves – a key element of Guantánamo's economy – will be replanted 250 m from the coast.

Maisí is an illustration of the long-term challenges and complexities of coastal management, ranging from the demolition of poorly located homes and facilities, to changing the economic alternatives in those communities that depend on fishing, to major engineering works.

Guantánamo has been hit continuously in recent years by major hurricanes: Sandy (2012), Matthew (2016) and Irma (2017), in addition to the severe drought between 2014 and 2017 that affected virtually the entire country.

"The latest atmospheric phenomena have affected the entire coastal area," Daysi Sarmiento, an official in the government of the province of Guantánamo, told IPS.

"Now Baracoa Bay is being dredged," said Sarmiento, referring to Baracoa, the first town in the area built by the Spaniards in colonial times, which faces the worst coastal risks.

The dredging is part of investments expected to be completed in September to protect Baracoa's coast, which is highly vulnerable to floods, hurricanes and tsunamis.

By August 2017, the authorities had eliminated more than 900 state facilities and 673 private buildings from beaches nationwide. On the sandy coasts in this area alone, a total of 14,103 irregularly-built constructions were identified at the beginning of the Life Task plan.

The central provinces of Ciego de Avila and Sancti Spíritus are the only ones that today have beaches free of zoning and urban planning violations.

There are at least six laws that protect the coastline in various ways, in particular Decree-Law 212 on "Coastal Area Management", which has been in force since 2000 and prohibits human activities that accelerate natural soil erosion, a problem that had not been given importance for decades.

"The community has grown further away from the coast," sports coach Milaydis Griñán told IPS. She defines herself as Cuba's "first inhabitant" because of the proximity of her humble home to the Punta de Maisí lighthouse, which is still recovering from the impacts of Hurricane Matthew.

"The risks have been high because we are very close to the beach, especially when there is a storm or hurricane or tsunami alert, but we don't have plans for relocation inland," she said.

WEBSITE:
http://ipsnews.net/
http://www.ipsnews.net/news/projects/caribbean-climate-wire/

TWITTER:
http://twitter.com/ipsnews

FACEBOOK:
http://www.facebook.com/ipsnews

PUBLISHER: FARHANA HAQUE RAHMAN
EDITOR: NALISHA ADAMS / ESTRELLA GUTIERREZ
DESIGN: ZOHRE BAIRIEVA
PROJECT MANAGEMENT: WALTER GARCIA