Hearing on Insular Area Climate Change Act

Meteorologist Ada Monzón

Good afternoon. I would like to thank Chairman Grijalva and Ranking Member Westerman for the invitation to testify before this Committee on the "Insular Area Climate Change Act. " It is an honor to share with you today my experience regarding the impact of climate change in the island environment and the need for swift actions to avoid the negative consequences of climate change.

I am meteorologist Ada Monzón and I have been a forecaster in Puerto Rico for 32 years. During that time I have forecasted and given weather updates during Hurricanes Hugo and Georges, and more than ten other tropical storm and hurricanes. Most recently –and for the first time in my life--I faced the challenge of keeping Puerto Rico informed during the passage through the Island of two Category 5 hurricanes, Irma and Maria. I am also an educator and a broadcaster. As an educator, I have dedicated my life to teaching about natural hazards and connecting science with the communities, especially working with nonprofit organizations, schools, industries, emergency management, local, state, and the federal government. I am here representing Puerto Rico, the education community, and nonprofits through the EcoExploratorio, which hosts the Science Museum of Puerto Rico and the Resilience Institute of Puerto Rico.

This conversation is needed because our islands are already victims of climate change and are in a very vulnerable position compared to other countries in the world. Changes due to climate change are already evident along our coasts due to sea-level rise and coastal erosion, in the temperature and rainfall records, in the impact to our corals and marine ecosystems, in our health system and economic development, and in our response and recovery to catastrophic events.

First, we need to understand the science and impact of climate change on our daily lives.

Temperatures

Scientists around the world have demonstrated that our global temperatures (air and sea surface) are rising in an unprecedented manner. The average temperature of the Earth was 57ºF between 1951-1980. Last year (2020) was 58.76°F (1.76ºF above average). Models project that if there are no actions to stop the greenhouse gases, there will be an alarming rate of increase of temperatures:

- by 2030 more than 2ºF,
- by 2050 up to 4ºF,
- and by 2100 up to 9ºF.

Under these conditions, there will be direct and indirect effects on organisms, hydrological cycle, maximum temperature records, decrease in agricultural productivity, changes in habitats and wildlife distributions, risks to human health such as stroke and cardiovascular diseases, which are the primary causes of death most associated with elevated summer temperatures, especially in

vulnerable populations, and the quality of life on Earth will significantly decrease. Life, as we know it today, will not end but will be significantly different.

What is the cause of the changes in temperature? There is plenty of evidence saying that this increased warming is related to human beings' daily activities around the world, such as producing energy based on fossil fuels, as coal and natural gas. The gases that are released into the atmosphere that are causing this global warming are carbon dioxide and methane. These are greenhouse gases that trap heat, which in turn warm the surface of the Earth and our oceans. Due to the influence of global warming from decades of greenhouse gas emissions, we now have a climate emergency. Immediate actions are needed to control these emissions while accelerating our adaptation measures and increasing our resilience to deal with this complex crisis.

Sea level

Since the middle of the 20th century, relative sea levels have risen by about 0.08 inches per year on average along the coasts of Puerto Rico and the USVI. However, rates have been slowly accelerating since the early 2000s, according to the 4th National Assessment for the Caribbean Region.

Under extreme scenarios, relative sea levels are projected to rise (compared to levels in 2000) by:

- 2050: up to 2.8 feet respectively,
- 2100: up to 10.2 feet respectively,

According to an IPCC report, the world projected sea level rise by 2100 could be up to 35 feet with a midpoint around 19'. It depends on how much of the Greenland and Antarctic ice sheets melt and how much ocean water expands. This could lead to an array of serious problems, especially for our islands, some of which can become inhabitable. This can displace millions of people and cause catastrophic economic damage. In Puerto Rico, this means that most of our maritime and our most important airport infrastructure will be underwater in less than 100 years if projections are correct. Saltwater intrusion associated with sea-level rise will also reduce the quantity and quality of freshwater in coastal aquifers.

What will this mean to our ocean species? The ecological and biological response is not well understood, but certainly, ecosystems face severe climate impacts due to sea-level rise, changing temperature and rainfall patterns, and are being degraded by pollution, overfishing, and unsustainable development.

Rainfall and freshwater

The impact of climate change on precipitation patterns can be particularly important to island communities. Too much rain along the mountains of our islands causes disastrous floods and landslides, while too little rain can deplete freshwater availability, make an area unproductive related to agriculture, and exacerbate water management problems, planning, and infrastructure capacity. These conditions will result in water rationing and agricultural losses.

Drought projections for Puerto Rico suggest that under increased temperatures, there will be an increase in both drought intensity and frequency due to decreases in precipitation.

Hurricanes

According to NOAA, hurricanes are becoming stronger, and climate change is making these storms more intense and destructive. Warming has increased the likelihood of a hurricane developing into a Category 3 or higher by about 8 percent a decade, and the trend line for this type of hurricane is up. As warming continues, the likelihood of having more intense storms and moving slower can have an enormous impact on life and property. Now we are preparing for the next hurricane season in three months.

Impact to Health

Health impacts include extreme heat that can cause dehydration, lack of clean water and sanitation, an increase of air contamination, more frequent and stronger Saharan dust events, and vector-borne diseases. Mental health impacts are also notable, as most survivors experience a high degree of psychological trauma during and after hurricane events.

Community Approach

Catastrophic events reveal that islands have more difficulties in responding to hurricane impacts and dealing with extreme impacts. It takes longer for disaster logistics and operations to establish, for managing supplies, and the time to task the response and recovery is enormous. There is a disproportional effect in our geographically small islands because we are remote and relatively short on human, food, water, and resources.

As important it is to move to renewable energy to reduce greenhouse gas emissions, our islands need to concentrate on the implementation of adaptation and mitigation measures to reduce natural, health, social, and economic vulnerabilities. Current fiscal and economic challenges of the islands, coupled with an increasing elderly population, create additional challenges for the islands' governments to prepare for, respond to, and recover from climate-related disasters.

I strongly believe that to transform our communities, we need to understand their needs, and only then can we design and implement programs in ways that community members engage to achieve adaptation, resilience, and mitigation. Therefore, governments, universities, and nonprofits need to change their approach by providing community-based solutions that can address the impact of climate change. Conversations are needed. Listen to their needs, then provide capacity building, connect leaders with other sources of information, use mapping tools, and look for strategies that are not government-centric for catastrophic events. For the immediate response to an extreme event, the local emergency management, nonprofits, and volunteer organizations are the first responders. Usually, these have extremely limited resources and struggle to deliver services. The model or assumption that local, state, and federal government will respond immediately is not real, and those expectations will not be met in the short term.

Climate and extreme weather events suffered in the last five years in PR have catalyzed actions that helped us to advance social transformation in our community, promoting an uprising in community-based organizations that have pursued sustainable development and climate adaptation. There are hundreds of Initiatives (academia, NGOs, and communities) that were borne after the hurricane season of 2017. Hurricane Maria was a game-changer, and we have learned that empowering communities can build a sustainable and equitable future for our islands. These initiatives were centered on the engagement of residents in neighborhoods that were impacted by Hurricane Maria and are still recovering from the aftermath.

The question we need to ask ourselves is how to best approach it? I would urge this committee to make sure that public policy serves our communities and that we use all this scientific knowledge to make it useful to the communities. If we have better local emergency management resources, we can respond faster. If we have accessible and prepared healthcare facilities for long period energy outages, we can respond to people that need intensive care, oxygen, insulin, or suffer renal deficiency and cancer. If we have better data collection of our most vulnerable population, those that are medically fragile, live in poor communities, and handicapped, we can respond faster. If we have an incentive for renewable energy practices, we will have a less economic impact and reduce carbon emissions. If we have better agricultural practices, we will have more food security. If we want to ensure the integrity of ecosystems and the protection of biodiversity, some can probably resist external environmental stresses. If we build according to codes and mitigate in high-risk zones, damages will be reduced. If we maintain our water reservoirs and limit the leakage from pipes, we can conserve water. If we recycle, reduce and reuse, we can protect the environment. If we have more empathy and solidarity, we can better understand community needs and make decisions that are community-based, centered on the well-being of the community.

We all have a responsibility to take actions to save lives, to ensure that we focus on public policy that ensures adaptation, mitigation, and resilience to climate change, and we have a responsibility to educate with empathy and solidarity, to understand the need of our communities, to empower them with resources and funding, to motivate to act and to ensure a better quality of life for our future generations.

Climate change is real. By experience, we know.

Thank you for holding this much needed and important hearing.