A Community's Fragility in the Wake of Hurricane Maria

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Introduction

In Puerto Rico there are communities located in areas where they only depend on one way of access. This entrance can be a bridge that goes over a river or a community in a coastal area where its design relies on only one way in and out. My community is located in Collores, Juana Díaz. This municipality is located in the southern area of the island and its population in 2017 was 46,275 based on annual estimates from the U.S. Census Bureau in 2018. Collores is one of the fourteen barrios of Juana Díaz and is a rural barrio with a working middle class population. This barrio has around 12 bridges that provide access to each community's mobility to work, school, get medical attention or make grocery shopping. Some of these bridges serve as the only entrance for small communities that are on the other side of the river. The river in Collores is called río Guayo and people who have lived in the community their whole lives know that even though the river looks small, the landscape drastically changes when it rains or a tropical system passes through.

Puerto Rico in the Climate Change Route

Figure 1. A Day After, Hacienda las Vegas, Collores, Juana Díaz
Photo by Author, September 21, 2017

On the island, 94 hurricanes and tropical storms have been reported between 1867 to 2017 (López and Castro, 2018). Of these 94 natural systems, only 16 hurricanes have touched the island and only three have been classified as a category 4 (López and Castro, 2018). According to López and Castro (2018) September is the most active month of the hurricane season 14 hurricanes from the 29 registered had passed during this month. After almost 20 years of not experiencing an intense hurricane, Irma hit the island in September 6 of 2017. After fourteen days of Irma, Hurricane Maria made landfall in Puerto Rico on September 20 as a category 4 which is classified as intense. The next day our community felt desolation because it was quiet and the first thing that passed our minds was to see if we still had access to the bridge. Many communities, including my own were left out without a national plan nor how to respond to a natural disaster event, specially when communities are located in places where they might suffer inaccessibility.

Mitigation Before the Hurricane

Those days before Maria came to the island were full of skepticism. Many people denied the arrival of Maria and in the end when it was more than obvious that it would hit, there was no other option but to hope for the best. Many Puerto Ricans had forgotten how to prepare for a hurricane. Every time citizens saw the television or listened to the radio announcement of a tropical system, many people at last moment went for supplies like food, water and gasoline. The community of Hacienda las Vegas in Collores, Juana Díaz has experienced firsthand the government's poor management systems, as seen in the past with their construction of the bridge, which community members knew would not withstand a natural disaster. For the construction of the bridge authorities do not consider environmental factors nor listened to the communities concerns. Many communities are located at places where they can be isolated after a natural disaster.

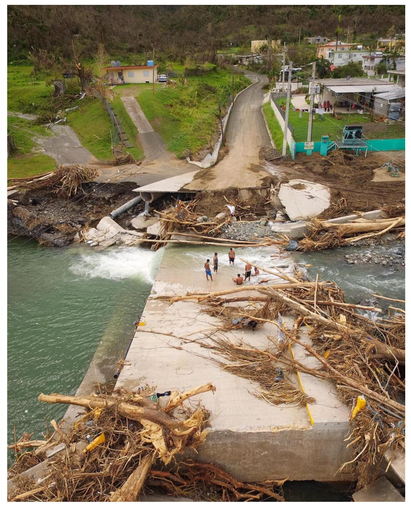

Figure 2 and 3. A Only way of Access Destroyed.
Hacienda las Vegas, Collores, Juana Díaz, P.R.
Photo by Edwin Alexis Zambrana Rodríguez, September 25, 2017

Who is in Charge of this bridge?

After the disaster, this community faced long period without their only entrance. The department in charge of the construction of any bridge is the Authority of Roads and Highways. To reclaim the insurance of the bridge the process dilated by bureaucratic processes in search of who is responsible to reclaim the funds for reconstruction. To this date there are no data nor a list that provides information on bridges that are vulnerable to climatic change, like rain seasons that make rivers loose sediment and natural vegetation that can affect the bridge's condition. These types of structures are not included as part of the priorities to address climate change in a place that will be continuously confronted by stronger, bigger and slower hurricanes. Today, the community does not count with a first response plan that prepares the families for future natural events.

Figure 4 and 5. Seven Months Under Construction.
Photo by Edwin Alexis Zambrana Rodríguez, September 25, 2017

Figure 6. Provisional bridge.
Photo by Edwin Alexis Zambrana Rodríguez, September 25, 2017

Lessons Learned

After this event, it is a reality that for any community that relies on one way of access it is urgent to address this type of situation. Now that climate change is a continuous and a real problem, Puerto Rico faces the challenge to integrate this theme as part of the evaluation, preparedness and recovery planning agenda. Communities, non-profit organizations, private organizations, municipalities and state government will need to address more resilient and sustainable strategies to adapt to climate change in the Caribbean. The following are recommendations:

- Create a list of all bridges that may be vulnerable towards climate change conditions and also it is important to identify those places in the rural areas where land can be susceptible to landslides.
- Municipalities should establish a relationship with communities that are exposed to these characteristics, list them as priority for first response and maintain communication.
- Look at the socio-demographic and health outcomes of communities that are in these areas.
- Educate each community with first response tools that empower communities to work with their municipality to create a first response plan for natural disaster situations.
- For the creation of bridges, the municipalities and Authority of Railroads and Highways should include environmental factors and community concerns in their statements regarding the creation of these structures as a way to build more resilient long term structures.

References: López Marrero, T. & Castro Rivera, A. (2018). Actividad ciclónica en Puerto Rico y sus alrededores: 1867 al 2017. *Centro Interdisciplinario de Estudios del Litoral*. Mayagüez, PR: Universidad de Puerto Rico. 12 p.