

# Global Rural Health Case Competition

## PUERTO RICO'S POWER CRISIS

SPRING 2018



All characters, organizations, and plots described within the case are fictional and bear no direct reflection to existing organizations or individuals. The case topic, however, is a true representation of circumstances in Puerto Rico. The case scenario is complex and does not necessarily have a correct or perfect solution, and thus encourages a judicious balance of creative yet perceptive approaches.

The authors have provided informative facts and figures within the case to help teams. The data provided are derived from independent sources, may have been adapted for use in this case, and are clearly cited such that teams can verify or contest the findings within their recommendations, if it is pertinent to do so. Teams are responsible for justifying the accuracy and validity of all data and calculations that are used in their presentations, as well as defending their assertions in front of a panel of knowledgeable judges representing different stakeholders.

Please note that in the case of Puerto Rico's hurricane recovery effort, data and new developments may arise during the case planning stage. Participants are expected to be aware of and maintain a working knowledge of all new developments, unless informed otherwise by the case committee.

## ❖ INTRODUCTION

Sebastian Alvarez currently lives with his wife and two daughters, as well as his parents, in a small home in San Juan, Puerto Rico. Sebastian previously worked for Greendown Medical Supply, Inc., but the continuous economic decline recently forced the company to relocate to North Carolina in search of greater tax and revenue benefit. Despite his skills as a machine technician, Sebastian has been unable to find work in his field since being laid-off in March 2017.

On September 20, 2017, Hurricane Maria made landfall in San Juan. With near Category 5 winds, the damage in San Juan was unprecedented. The house where Sebastian lived with his family was destroyed, forcing them all to move into a small apartment where Sebastian's sister, Andrea, lived with her husband and their new baby. Despite having nine people living in a 2-bedroom apartment, this situation was initially suitable as Andrea's apartment building was powered by an emergency generator. However, nearly 6+ months after the hurricane hit the island, the building is still without regular electrical power. Due to high demand, the diesel needed to power the generator is now expensive and extremely rationed. The family has only been able to keep the generator running intermittently.

In November 2017, Andrea joined the thousands of Puerto Ricans leaving the island in search of a healthier and more sustainable living environment. Andrea's infant, born just 1 month before Hurricane Maria, has severe asthma and requires consistent, quality treatment to manage a healthy lifestyle. Between the low air quality from diesel fumes and lack of access to medical supplies and doctors, both before and after the Hurricane, Andrea decided she could find a better life for her child by moving to Florida.

Since arriving in Orlando, Andrea has consistently encouraged Sebastian to leave Puerto Rico and join her on the mainland since she thinks Puerto Rico's hurricane recovery is a lost cause. Sebastian is tempted to pack up and leave as well, but feels that it is his responsibility as a native of Puerto Rico to do what he can to assist in the recovery effort at home.

Sebastian decides to write to a friend working with an NGO for help developing sustainable ideas to aid in the recovery effort.

*Dear Richard,*

*I know it has been some time since we last spoke, but the situation in Puerto Rico is becoming worse every day. My family and I are still without power and the price and rationing of diesel has made it nearly impossible for us to rely on a generator. A majority of the city lacks access to basic medical care and we are still forced to boil all water before drinking or cooking.*

*I recently learned that you are working with the Global Sustainable Environment non-profit organization and I'm hoping you can help me. It's clear that the political disputes between the federal and Puerto Rican governmental administrations will continue to delay much needed funding and supplies for those of us left on the island. I am willing to mobilize people in San Juan in a recovery effort but am unsure where to start to make this a sustainable recovery effort that can help prevent another catastrophe like Maria. I would also like to use this recovery effort as an opportunity to improve quality of life for Puerto Ricans on the island.*

*Would you be willing to help me come up with a comprehensive plan to tackle this dire crisis?*

*Sincerely, Sebastian Alvarez*

## ❖ BACKGROUND ON PUERTO RICO

Puerto Rico is located in the Caribbean, east of the Dominican Republic. The island is 9,104 sq km, with only 145 sq km of that being water. It is primarily mountainous with sandy coastal areas along the 500 km of coastline. The climate is tropical and mild with little seasonal variation. 63% of the island is forested with 22% of land designated as agricultural.<sup>2</sup>

As of July 2017, Puerto Rico had an estimated population of 3.4 million people. A majority of the population is clustered along the coast with the most populous area, the San Juan metropolitan area, home to nearly 75% of the entire population. Infant mortality rates in Puerto Rico are 133<sup>rd</sup> in the world with an estimated 6.4 deaths/1000 live births. In contrast, life expectancy ranks 32<sup>nd</sup> in the world.<sup>2</sup>

Inhabited for centuries by indigenous populations, Puerto Rico was first colonized by Spain beginning in 1493. The following 400 years saw the introduction of the Atlantic slave trade and near extermination of the indigenous population. In 1898 the United States invaded the Spanish colony during the Spanish-American War. The island was ceded in treaty at the end of the war in December 1898. Since then Puerto Rico has been a United States territory. The U.S. Congress eventually granted Puerto Ricans U.S. citizenship in 1917.<sup>2</sup>

Puerto Rico's relationship with the United States has remained complicated throughout the 20<sup>th</sup> and 21<sup>st</sup> century. Although Puerto Ricans are U.S. citizens, if they live on the island they are not able to vote in U.S. elections. The island is not traditionally represented in the federal legislature. Puerto Rico is represented by a single elected "resident commissioner" in the U.S. House of Representatives who is eligible to vote only as a member of house committees but is not a full member of the legislature and does not vote on "full floor" bills. Puerto Rico's status was defined as a self-governing commonwealth (or "Free-Associated State") of the U.S in the 1950s and since 1949 has been governed by a democratically elected governor.<sup>2</sup>

During its 100-year history as a U.S. territory, Puerto Ricans have voted for proposed referendums on status on five separate occasions dating back to 1967. These referenda or plebiscites have been politicized and motivated by the two dominant political parties, the Partido Nuevo Progresista/New Progressive Party (pro-statehood), and Partido Popular Democrático/Popular Democratic Party (pro-free- association). Although a majority of voters voted in favor of statehood in 2012 and 2017, the ballots were manipulated by the party in power to divide the votes for the opposition. Before 2012 referenda favored the current territorial status. In 2012 the ballot offered a question whether the voter would like to maintain the current territorial status: Yes or No; followed by a choice between Statehood, Independence, or a Sovereign Free Associate State different from the current status. The PDP had campaigned for people to abstain (they did in the 1998 referendum as well) so while Statehood received a majority, the sum of Sovereign Free State and blanc ballots was higher. In 2017, after winning the election with less than half voter support, the pro-statehood governor declared a much criticized referendum where the choices were to vote for statehood, current territorial status, or independence/free-association. Statehood appeared to win because opposition parties campaigned for no participation, and the ballot itself split the PDP voters into two possible definitions of the same idea. Regardless of the results of all these referendums, the decision on Puerto Rico's status is up to an act of the U.S. Congress. The U.S. Congress has always ignored the referendum and the U.S. federal government has demonstrated no interest in resolving the issue of Puerto Rican status.<sup>3</sup> Most Puerto Rican citizens do not currently pay federal income tax. However, they do pay Social Security, Medicare, import, export and commodity taxes, and federal income tax if they are employed by the federal government on the island and on any capital gains on investments in the United States.<sup>1</sup>

Puerto Rico's economy has been in decline since 2006, experiencing negative growth due to the larger U.S. economic crisis and an exodus of U.S. corporate investment in the region. For decades the Puerto Rican government had been relying on issuing government bonds to support infrastructure. These bonds came with guarantees of payment and were exempt from any federal or state taxes making them attractive investment opportunities. By 2006 these bonds which had been issued to pay for schools, parks, and roads were being issued to cover spending deficits and repay raided public pension funds. This coincided with the 2008 economic crisis, leading to an increase in the price of oil and gas which power a majority of the island. This economic decline has led to an extreme debt crisis. As of May 2017, Puerto Rico held \$73 billion of debt and was working toward restructuring their debt through insolvency (similar to bankruptcy).<sup>5</sup> Production and manufacturing greatly outnumbers agriculture as a means of economy and income. Exports are almost 50% greater than imports. Tourism also greatly contributes to the economy with 8% of the 2016 GDP coming from travel and tourism dollars.<sup>4</sup> Some amount of income for residents comes from remittances from those working on the mainland.

### ❖ THE POWER CRISIS

On September 20, 2017, Puerto Rico was hit by Hurricane Maria, an almost Category 5 storm and the 5<sup>th</sup> strongest storm to make landfall in U.S. history.<sup>6</sup> The ensuing damage, combined with a disorganized response from both the Puerto Rican and the U.S. governments, caused widespread destruction and left 100% of the island without power. Initial reports from local officials indicated 80-90% of structures were destroyed.<sup>7</sup>

Puerto Rico's population relies heavily on electrical power for health and living essentials. The island operates a centralized electricity grid and 80% of power lines were destroyed during Hurricane Maria.<sup>9</sup> Four month after the hurricane made landfall, 450,000 residents of Puerto Rico were still without power.<sup>29</sup> This lack of power has affected hospitals, airports, police and fire stations, food refrigeration, access to clean drinking water, and other vital health needs.<sup>9</sup>

The Puerto Rico Electric Power Authority (PREPA) was created in 1941 as part of President Franklin Roosevelt's New Deal. This creation sparked rapid industrialization on the island over the next several decades, which saw an influx of U.S. pharmaceutical companies and other corporations looking to take advantage of a skilled labor force and federal tax benefits. These benefits were secured through an Internal Revenue Code section which guaranteed that income earned by U.S. companies on the island was exempt from federal taxes. A stable, centralized power grid helped generate steady work and income for Puerto Rico. When the federal tax benefits were repealed in 1996, many companies left the island, taking with them jobs, as well as PREPA customers and tax revenue. Overtime, a lack of income, mismanagement, corruption, and disorganization from government entities has left the PREPA grid infrastructure severely corroded, unmaintained, and heavily dependent on oil. Over the years, money has been invested in researching sustainable power sources and changes, but almost nothing has been implemented. PREPA is currently responsible for \$9 billion of Puerto Rico's \$73 billion of debt.<sup>9</sup>

The lack of reliable energy through the central grid has caused many Puerto Ricans, over time, to turn to emergency power generators. For those that can afford it, owning a generator, typically powered by diesel fuel, has become commonplace. The increase in generator use has led to a rationing of diesel fuel on the island, as well as a decrease in quality-of-life and an increase in environmental issues due to diesel fumes.

### ❖ POTENTIAL AREAS FOR INTERVENTION

**DEBT:** Puerto Rico's economy has been in steady decline since 2006 and is now heavily in debt. In 2016, the U.S. Government passed PROMESA – the Puerto Rico Oversight, Management, And Economic Stability Act – which

aimed to restructure Puerto Rico's debt.<sup>10</sup> However, with the enormous destruction caused by the hurricane, the mass exodus of citizens following Hurricane Maria, and a new, less predictable federal administration overseeing the recovery effort, economic recovery is currently up in the air.<sup>30</sup>

**HEALTHCARE SYSTEMS:** Puerto Rican citizens contribute to Social Security, Medicare, and Medicaid, but the federal government does not contribute the same amount in U.S. territories as it does for most states. Puerto Rico is currently expected to fund 80% of its own Medicaid program.<sup>10</sup> The denial of services, seemingly arbitrary removal of doctors from health networks, and lack of reimbursements from health insurance companies contracted by the government has also increased the costs to doctors and hospitals and risks the health of the Puerto Rican population. The declining number of doctors on the island had been a cause of concern before the hurricane as many physicians, particularly specialists, moved to the United States in search of better living conditions, pulled by more secure financial opportunities during the financial crisis.

**HEALTHCARE INFRASTRUCTURE:** As of the writing of this case, Puerto Rican hospitals still lacked sufficient electrical power, access to clean water, adequate communication systems, and essential medical supplies.<sup>11</sup> Additionally, medical supplies that are shipped have difficulty reaching those who need them. Currently, supplies for the Army Corp of Engineers are dominating the movement of goods and delaying the delivery of essentials for the rest of the population. Furthermore, damaged roadways, electrified street signals, and bridges have hampered the delivery of goods to more rural locations around the island.<sup>27</sup>

**MENTAL HEALTH:** Mental health issues, particularly suicide, are on the rise as a direct result of Hurricane Maria. This could indicate the potential for a mental health crisis on the island.<sup>26</sup>

**POWER & SUSTAINABILITY:** Puerto Rico's current power structure is environmentally unsustainable and heavily dependent on oil. It is also unmaintained and lacking in basic infrastructure to provide sufficient power to the island. Although solar and wind power has been looked at in the past to relieve Puerto Rico's power crisis, cost has been a significant barrier. Elon Musk's renewable energy firm, Tesla, has donated a number of solar panels and energy storage batteries, which have been installed primarily at hospitals and firestations.<sup>12</sup> Puerto Rico's current governor supports a renewable energy transition for the island.<sup>13</sup>

**WATER ACCESS & SANITATION:** A lack of electricity and severe structural damage has led to much of the island being without sufficient access to potable drinking water. Several cases of Leptospirosis were reported immediately after the hurricane and officials warn a rising mosquito population leaves Puerto Rico at risk for an epidemic.<sup>14,18</sup> Additionally, hurricane damage has overburdened the sewer and drainage systems and has led to severe pollution of Puerto Rico's beaches. Even now, 6+ months after Hurricane Maria made landfall, residents of San Juan are encouraged to boil all water for cooking and drinking.

**RESILIENCY:** Puerto Rico needs a plan for future natural disasters and catastrophes that may threaten the island. Hurricanes will continue to be a threat as climate change impacts storm severity and frequency.

## ❖ COMPLICATING ISSUES

**FUNDING:** The federal government has failed to provide sufficient funding for relief efforts in Puerto Rico. A bill that would have allowed for additional Medicaid funds to be sent to Puerto Rico was voted down in mid-December 2017.<sup>24</sup> Lawmakers did approve a \$36.5 billion disaster relief package in October, but a majority of the aid was earmarked for Texas and Florida, with only a small portion designated for Puerto Rican aid.<sup>25</sup> As of January 2018, further relief bills had been proposed but were held up in Congress amid partisan objections.<sup>25</sup>

**TAXES:** The new U.S. tax bill signed into law by President Donald Trump on December 22, 2017 imposes greater tax burdens on Puerto Rico. Under the new legislation, companies based in Puerto Rico are taxed similarly to those in foreign countries, rather than in the United States. In particular, intellectual property produced there will now be taxed at 12.5%. Although the impact of this new tax bill is still unknown, officials worry it may trigger an exodus of the medical supply manufacturing industry from the island, which currently makes up a third of Puerto Rico's tax base and offers employment for a large portion of the population.<sup>15</sup>

**LOCATION:** Puerto Rico's status as an island makes shipping relief materials and medical assistance more difficult than with mainland disasters. The Jones Act, which stipulates that all vessels operating between U.S. ports must be American-based, has caused significant hardship for foreign countries wanting to offer relief and aid to Puerto Rico. This act was temporarily waived by President Donald Trump in the wake of Hurricane Maria, but was not suspended completely.<sup>22</sup> A shortage of Jones-compliant U.S. vessels and trucks on-island for supply distribution has severely delayed relief efforts. The movement of good through the port of the island is now dominated by those that are providing materials for the US Army Corps of Engineers and others rebuilding critical state infrastructure. This means that other goods that Puerto Ricans need for rebuilding are being delayed or held back as non-essential.

**POLITICS:** The current U.S. federal administration, lead by President Donald Trump, has been relatively unfocused compared to that of its predecessors. His leadership has been described as volatile and unpredictable and his response to Puerto Rico and Hurricane Maria has been heavily criticized. With many key administrative roles left unfilled and the distraction of an impactful conspiracy investigation taking up much of the White House's attention, the ability of the federal government to act in the interests of Puerto Rico and provide significant aid remain uncertain.<sup>17, 31, 32</sup>

**THE BLAME GAME:** Puerto Rico and the U.S. federal administration have been unable to work together or come to a consensus on what is needed to provide efficient and effective relief aid. Both sides have placed the blame for this squarely on the other's shoulders. President Donald Trump and San Juan major Carmen Yulín Cruz have both given multiple inflammatory interviews expressing personal dislike for the other.<sup>23</sup> Within the federal government, Republicans and Democrats both refuse to take responsibility for denying Medicaid relief funds for Puerto Ricans, each blaming the other side.<sup>24</sup>

**COMMUNICATION:** As of December 2017, FEMA claimed that 95% of the island had access to potable drinking water which vastly contradicts reports from other outlets. General opinion amongst relief officials is that this number is significantly overestimated. FEMA relies on reports from local citizens in disaster zones, implying a significant issue with communication between those affected by Hurricane Maria and disaster relief coordinators from the U.S. mainland.<sup>19, 20</sup> Lack of communication has also made it difficult to deliver aid to those in need and to get an accurate death toll.<sup>21, 31, 33</sup>

**POPULATION AND LABOR:** By the end of December 2017, almost 250,000 Puerto Ricans had fled the island for Florida, leaving a massive hole in the work force and fewer people to contribute to economic rebuild efforts.<sup>15, 16,</sup>  
28

## ❖ SUMMARY

Sebastian Alvarez is interested in mobilizing his San Juan neighborhood and the wider community to aid in the recovery effort, but he would like to do it in a way that builds a robust and environmentally viable way of life in Puerto Rico, so as to be better prepared for another Hurricane Maria. His friend Richard from the NGO Global Sustainable Environment Organization has replied confirming that he and his colleagues will help Sebastian build

a holistic recovery plan that will help sustain Puerto Rico beyond the damage from Hurricane Maria by focusing on PREPA's crumbling power grid, the adequacy of hospitals, and potable water service all effected by the overall power crisis.

It has now been months and little has changed. Richard, Sebastian, and you have ideas that you believe can help restore health, hope and resiliency to Puerto Rico. You decide to write a bold proposal for the Governor of Puerto Rico offering solutions to regain control of the chaos and preposterous circumstances that have unfolded. You have short-term and long-term solutions, all of which you feel are necessary investments to get things back on track. You have strong rationale for your bold solutions. Your solutions are feasible, but involve utilizing a variety of available resources.

To successfully solve this problem, it will likely take a multi-pronged approach that addresses multiple systems such as power, water, health, and communications. It will also likely include ideas to prevent this type of breakdown in the future (infrastructure, policy, sustainability). Your proposal should include a systemic approach that impacts health through several encompassing areas that may include but are not limited to: community resilience, social networking, technology, economics, politics, and disaster response and preparedness.

How do you propose to solve this crisis? How will you restore health to the entire population? How will your ideas be sustained into the future to prevent this type of crisis from unfolding again?

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