

## **Project: Haiti's Resilience to Climate Change and Extreme Weather**

### **Situation:**

Haiti is a densely populated country facing many hazards. An active fault line makes Haiti vulnerable to earthquakes. The country is most vulnerable to the impacts of climate change.<sup>1</sup> Increased hurricanes and large scale flooding events, sea-level rise, storm surge, and long periods of drought are only a few of the hazards that Haitians will face.

There is no question that the earth's climate is changing. The average temperature observed in Haiti rose more than 1 degree Celsius between 1973 and 2003. A fifteen percent increase in Category 3, 4, and 5 tropical storms has been observed between the 1970s and the 1990s. During the Atlantic hurricane season Haiti can see over an inch and half of rain each day. How can Haiti experience drought when they receive so much rain? Haitians are largely dependent on charcoal for energy and heating needs. The charcoal is harvested from the trees on the island. The increased need for charcoal has led to major deforestation. There is only an estimated 1.5-3% forest cover remaining on the entire island.<sup>1</sup> This deforestation leaves the soil vulnerable to flash flooding from heavy rainstorms. The heavy rain produces landslides and mudslides. This makes farming and agricultural difficult when the soil and nutrient sediment is washed away.<sup>2</sup>

The decimated agricultural industry on the island makes food security a real threat. Haiti receives about fifty percent of its food through imports.<sup>3</sup> The population is expected to balloon to over 11 million people by 2020. The cost of food imports is expected to skyrocket to 120-180% of current costs. If climate change impacts are not assessed and addressed soon the future for the Haitian people will face eminent decline. With being so depended on food imports, Haiti is also vulnerable to climate change impacts around the world. When the food supplying nations face shortage in export supplies due to drought or flooding the Haitians will suffer. Food security will become a devastating disaster all on its own.<sup>2</sup>

Currently the Haitian government administers a flood early warning system. It is reported that they do not maintain or provide real-time data. This makes their current early warning program ineffective. In an environment with increased heavy rain storms and tropical activity an up-to-date and efficient early warning system is needed. Many Haitian lives can be saved with an effective early warning system.<sup>2</sup>

Now facing its fourth year of drought while continuing to rebuild following the devastating 2010 earthquake there are many opportunities to incorporate climate change resilience. Changes need to occur

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<sup>1</sup> Columbia University. General Earth Institute: Climate Change in Haiti, 2012, <http://blogs.ei.columbia.edu/2012/02/01/climate-change-in-haiti/>. Accessed 3 May 2017.

<sup>2</sup> University of Montreal/Oxfam America. Climate Change Resilience: The Case of Haiti, 2014, <https://www.oxfam.org/sites/www.oxfam.org/files/rr-climate-change-resilience-haiti-260314-en.pdf>. Accessed 3 May 2017.

<sup>3</sup> ReliefWeb. Haiti: Environment and Climate Change Fact Sheet, 2016, <http://reliefweb.int/report/haiti/haiti-environment-and-climate-change-fact-sheet-2016>. Accessed 3 May 2017.

across the spectrum of agriculture, flood warning, shelter and high ground support, preparedness and prediction, and infrastructure. This capacity is lacking in government infrastructure and will likely require some support and capacity building.

### **Capacity Building Focus:**

Haiti has many vulnerabilities that are expected to increase in severity in the coming years as climate change increases its impact. The highest priority is with food security to sustain the current and growing population. In order to develop an adequate agricultural program Haitians must build capacity through preparedness and early warning for the following:

- Deforestation
- Severe Flooding
- Hurricanes/Tropical Storms
- Drought
- Overfishing
- Man-made Riverine Changes

### **Capacity Building Project Development:**

1. Develop a survey for the client's personnel to determine the mode for training (i.e. are they better visual learners, auditory, explanation driven, are they better readers for understanding?).
2. Develop a list of ideas/concepts necessary for a successful outcome.
3. Research and develop an understanding of the client's current level of understanding of weather patterns and concerns and how climate change could increase the frequency and severity of events listed in the capacity building focus.
4. Research and develop an understanding of the client's ability to reach out to the target community and implement and provide the necessary information and trainings.
5. Map any shortfalls that may lead to ineffectiveness in the plan.
6. Develop a training/lesson plan to get the client from their current capability to the successful outcomes outlined in Item #1.
7. Establish a program timeline that includes milestones either by objective or by set deadline dates.
8. Produce required training materials
9. Establish a method of evaluation to gauge the client's progress through the objectives to be used throughout the implementation phase.
10. Prepare for contingency in case the first operational plan is disrupted (i.e. relocation of training-logistics, loss of power, conflict, emergency situations).

### **Capacity Building Project Implementation:**

1. Follow the lesson plan developed in Project Development Item #6.
2. Evaluate the success/failure of the project at the midway point from an in-house perspective as well as from the client's perspective.
3. Utilize the results of the evaluation to either continue on the original lesson plan or make the necessary modification to get the project back on track and toward the successful reaching of the planned outcomes.

**Capacity Building Project Closeout:**

1. Ensure that all objectives/outcomes have been met.
2. If any objectives or outcomes have not been met use evaluation materials to determine if the completion date should be extended or if a second project (essentially a “part II”) should be developed and implemented.
3. Conduct a complete analysis of the project through in-house evaluation of all project phases.
4. Gather program evaluations from the Client as well as all trained personnel.
5. Use both in-house and client evaluations to write a final report on the outcome of the project.
6. If any, use data to develop a best practice for similar projects going forward.

### **Early Warning Focus:**

Haiti has a long standing history of deadly hurricanes. There have been many storms in which thousands of lives have been lost. <sup>2</sup> The topography of the country, areas deemed residential, and the severe deforestation make flash flooding fatalities a real threat. The development of an Early Warning Program for both flash flooding and hurricane/tropical storm events could prove effective in saving many lives.

### **Early Warning Project Development:**

1. Research and understand the topography of the land. Also look at historically what has happened with flood patterns and residential damage during events of differing severity.
2. Assess current shelter and evacuation routes.
3. Assess the current early warning system if one is in place.
4. Research communities with similar populations and their mechanisms for early warning.
5. Develop a mechanism for measuring the success of the outreach..

### **Early Warning Project Implementation:**

1. Utilize research on sheltering and evacuation routes to develop recommendations for best practices.
2. Utilize research on current early warning system and systems used for similar populations to develop recommendations on how to increase capability for early warning and tie that into sheltering and evacuation practices.
3. Develop educational materials for distribution to NGO's, non-profits, and residential communities on preparedness, situational awareness, flash flooding risks, sheltering and how to identify high ground.

### **Early Warning Project Closeout:**

1. Ensure that all objectives/outcomes have been met.
2. Ensure that no environmental changes have occurred that would require a revisit on practices or educational materials.
3. Conduct a complete analysis of the project through in-house evaluation of all project phases.
4. Gather program evaluations from the Client's personnel.
5. Use both in-house and client evaluations to write a final report on the outcome of the project.
6. If any, use data to develop a best practice for similar projects going forward.

## **Blue Ocean Analytics-Emergency Management for Tomorrow (BOA-EMT) Disclaimer**

This demo provided by BOA-EMT is in no way a forecasting or prediction mechanism for day-to-day operations or routine life-saving measures. The final product of this project should only be used to provide best practices and general guidance on preparing for and building the capacity to manage the impending impacts of climate change on the the various geographic regions and the people of Haiti. Please consult with the various authoritative bodies and leadership for routine and daily operations, **as well as official forecasts and severe weather statements.**