

Reducing Risks, Avoiding Disaster: Managing Hurricanes the Cuban Way

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By Jennifer Schuett and Eva Silkwood



Approaching hurricanes are presented to the Cuban public as moving within a cone, rather than in a misleading linear path.

From the most developed nations to the most underdeveloped, none is free of the risk of storms, floods, droughts and other natural phenomena. Yet these events do not necessarily need to become natural disasters. “There is nothing natural about a disaster,” stated Dagoberto Rodriguez, former chief of the Cuban Interests Section in Washington, D.C. With proper planning and risk-reduction measures, “natural disasters” can be avoided. This has been the successful approach in Cuba for the past 30 years – in which time, despite being in the direct path of several hurricanes each year, there have been remarkably few fatalities.

Why is the Cuban model of disaster mitigation so successful? Can the United States learn something from Cuba? These are questions that the Center for International Policy (CIP), with the support of the Ford Foundation, is exploring. In 2007 CIP hosted a working conference for hurricane specialists from the United States and their Cuban counterparts to share expertise and exchange best practices for saving lives when natural phenomena strike, specifically hurricanes. (For a full report on this conference please see CIP’s August 2007 report *Facing the Storms Together*.)

To follow up on the 2007 Hurricane Preparedness Conference, the Center for International Policy led a delegation of U.S. specialists to Cuba in April 2008 to learn about the Cuban disaster-mitigation model straight from the source. The delegation learned about the Cuban disaster preparedness system from Cuba’s top experts on the subject. Speaking on the topic of prediction and early warning were Dr. José Rubiera, chief meteorologist and director of forecasting at the Metrological Institute of Cuba; Abel Centella, chief of the National Center on Climate Change; and Dr. Oscar Solano Ojeda, head of the agricultural meteorology center at the Institute of Meteorology. To learn about the community-based preparation and evacuation, the delegation met with civil defense leaders from the district of San Juan in Havana. Dr. Guillermo Mesa Ridel and Dr. Julio Teja P. Pérez of the Cuban Ministry of Public Health explained to the delegation precautionary measures taken to prepare healthcare professionals and facilities for emergency situations.

Ivor van Heerden: co-director of the Louisiana State University Hurricane Center; associate professor of Civil and Environmental Engineering at LSU; and author of *The Storm: What Went Wrong and Why During Hurricane Katrina – the Inside Story From One Louisiana Scientist*.

Walter Dickerson: director of emergency management of Mobile County, Alabama.

Reverend Walter Baer: minister for Grace Episcopal Church in New Orleans, involved in post-Katrina recovery efforts; activist and community leader in the region.

Joe Spraggins: general manager of Andover Development and Andover Construction, builder of stronger, more energy efficient homes to withstand category five hurricanes; former director of emergency management, Harrison County, Mississippi (during Hurricane Katrina).

John Dosh: chief of emergency management for Pensacola, Florida.

Jay Higginbotham: active member of the U.S.-Cuba Sister Cities Association; founder and director of the first official U.S.-Cuba sister city, Society Mobile-La Habana; retired director of the Municipal Archives of Mobile, Alabama.

Randy Poindexter: founder and director of the New Orleans-Mariel Amistad Society (NO-MAS); founder of Friends of Cuba in the U.S. (FOCUS); active member of the U.S.-Cuba Sister Cities Association.

Jennifer Schuett: associate of the Cuba Program for the Center for International Policy.

Jane Barton Griffith: director of institutional advancement for the Center for International Policy.

HISTORY OF CUBAN DISASTER PREPAREDNESS

After Hurricane Flora devastated the island in 1963, the Cuban government began to overhaul their disaster management system. The modifications made to the Cuban disaster preparedness model since that time have had an enormous impact. “Cuba’s success in saving lives through timely evacuation when Hurricane Michelle struck in November 2001 gives us a model of effective government-driven disaster preparedness,” stated the International Federation of the Red Cross in their 2002 Disaster Report.

Revolutionary changes were made to the model, the foremost being the prioritization of human life in preparedness measures – placing the value of one life far above that of any material goods. Subsequent improvements include the way in which education, preparation and recovery efforts are carried out. Modifications to the Cuban disaster preparedness model have elevated it from a state of disappointment in the 1970s to its current state as a model of effective government-driven disaster preparedness.

In the 1970s and 1980s, meteorological services in Cuba were jokingly referred to as coming from the “*Instituto de Mentirologia*,” or the Institute for the Study of Lies (as opposed to the Institute for the Study of Weather. The Spanish word “*meteorologia*” sounds similar to “*mentirologia*”). The center’s inability to predict weather accurately led to low levels of credibility with the Cuban people. Ongoing improvements, which began in the 1980s, include updating the technological equipment so as to obtain better radar images, enhancing communication with the people, increasing the number of meteorological centers in the country and refurbishing existing centers. In the 1980s, the language used in forecasts was simplified so that the technical science could be understood by the common person. Shortly thereafter, in 1981, meteorologists replaced TV broadcasters on the nightly news to ensure that weather reports were given accurately.

By 1999, the Meteorological Institute of Cuba was predicting storms with 89-92 percent accuracy – the same level as the United States and Europe. Further investment in the Cuban prognostic capabilities made by the Chinese should allow the Cuban Institute to reach even higher levels of accuracy.

STRUCTURE OF THE CUBAN MODEL

The first step in the Cuban disaster mitigation effort is early storm warning. Dr. Rubiera and his colleagues at the Instituto de Meteorología generate Cuban national weather reports with information collected from satellites, radars, sound stations, ships, buoys and airplanes. Collected information is carefully compared with numerical models of prognostication and the most accurate forecasts and storm predictions possible are made. However, as Dr. Rubiera, pointed out, “accurate storm predictions do not matter without communication with the people.”

Communication, the second step in the Cuban disaster mitigation system, aims to inform every citizen of the risks posed to them and what they can do to avoid vulnerability. Radio broadcasts reach 97 percent of the population while TV reaches 96 percent. Despite limited internet connections, storm warnings can also be found on the Meteorological Institute of Cuba’s website at www.insmet.cu.

One of the components of the Cuban alert system that allows for such high rates of success during even the most violent of hurricanes is the level of consciousness that the people have of the dangers posed to them by the approaching weather.

Seventy-two hours before a storm hits the island, a first warning goes out to mentally prepare the people for what is to come. At forty-eight hours, evacuations begin in which local authorities pay special attention to those citizens who may need additional assistance such as pregnant women, the elderly and disabled. Children are sent home from school, quickly harvestable crops are collected, and transportation networks mobilized.

Finally, twenty-four hours before the storm hits, the affected areas are evacuated and shelters are stocked with water and medicines from the local emergency supply. One of the many problems American emergency managers faced during Hurricane Katrina was American citizens refusing to evacuate their homes. Despite the mandatory evacuation announcements made in some areas, local authorities lacked the capability to enforce these orders. When questioned about the issue of forced evacuations, Cuban specialists remarked that most Cubans have a profound understanding of the risk posed to them if they remain in

the path of the storm, thus they are more than willing to evacuate and the problem of forced evacuations does not often arise. During Hurricane Noel in 2007, for example, despite an estimated \$500 million (USD) in damages, 80,000 residents in Cuba were evacuated, and only one man died attempting to cross a swollen river.

Additionally, the education and preparation of the Cuban citizen begins long before storms are spotted. Every May the entire nation participates in *Meteor*, a drill to practice emergency evacuation. This drill, in addition to citizen’s awareness of the frequency of hurricanes that befall their island nation, educates Cubans from a very young age about the emergency procedures. Information materials designed for children are distributed throughout the country and emergency broadcasts are made in layman’s terms and complemented by graphics to ensure that every Cuban has access to and can understand information on these natural phenomena. “People tend to see hurricanes as a point, moving along a certain path,” explained Dr. Rubiera, but in reality the area affected by hurricanes is much larger. By showing the people a cone-shaped



Dr. Jose Rubiera, chief meteorologist at the Cuban Institute of Meteorology in a TV broadcast (1981).

radar image of where a hurricane could go and what areas will be affected by the hurricane (its winds and possible flooding), the Cuban people gain a better understanding of the danger they might face.

Continuity in the way in which disasters are managed from year to year and from region to region also decreases risk by lowering the level of confusion during a national emergency. Hospitals, for example, have clearly designated areas for patients during hurricanes or other natural phenomena. Color-coded mark-



U.S. Hurricane Preparedness delegation, April 2008, Havana, Cuba.

ers on every wall point patients in the proper direction, increasing hospital efficiency and decreasing confusion. Hospitals remain marked year round and every hospital is uniformly labeled.

CUBA'S NATURAL DISASTER MITIGATION

Despite having similar goals of minimizing damage and saving lives, the way in which Cuba and the United States prepare for and manage hurricanes is quite different. Some of the obvious differences include the varied capacity of the two governments to enforce evacuation orders, and the highly developed infrastructure in the United States. Other discrepancies can be found in the divergent roles of the private and public sector in the United States and Cuba. While the United States is based on a free market economic system that outsources property damage assessment and reimbursement to private insurance companies, the Cuban government handles these matters all on its own. Yet other differences, which appear to have a greater impact on the success of disaster mitigation efforts, have nothing to do with the difference between communism and capitalism.

Three positive points that stand out the most about the Cuban system are: a) the degree of preparation to ensure that every citizen is informed of the risks and thus follows the procedures to mitigate risk, b) the guarantee of property protection and c) the value placed on the life of each and every person, which far exceeds that of property.

Preparing for the hurricane season in Cuba is not merely stockpiling supplies to prepare for a disaster, but doing anything possible to mitigate disaster.

This preparation includes educating the populace from a very young age, clearly and permanently marking emergency facilities (such as hospitals and shelters) and most importantly, ensuring the psychological preparation of the people. As Dr. Rubiera explained, the Cuban system seeks to keep its citizens as well informed as possible of the risks they face in order to empower the people to protect themselves. By alerting them to danger at the earliest possible moment, the Cuban government keeps unpleasant surprises to a minimum.

In addition to understanding the risks posed to them by an approaching hurricane, the Cuban people understand the provisions guaranteed to them by the Cuban government. In an emergency evacuation scenario, such as that of an approaching hurricane, the Cuban government provides shelter not only for families, but also special facilities for expecting mothers staffed with doctors and nurses. Additional precautions are taken to ensure the safety of pets and material possessions.

Being mentally prepared for the oncoming storm includes knowing that life will quickly return to normal after the storm. The Cuban government guarantees that to the extent possible, household valuables are removed from risk by being stored in protected shelters or areas that are not likely to flood. In the case of floods, large appliances and household valuables, such as refrigerators, are moved to the upper levels of apartment buildings. After a storm, the government evaluates the damage and replaces or repairs damaged property in order of priority. Cuban hosts admitted that the model does not always work as it should, as no model ever does, but the promise of replacing lost items and the high survival rates help Cubans to psychologically prepare for disasters and thus lower the extent of mental anguish resulting from the disaster.

U.S. APPLICATION OF THE CUBAN MODEL?

The final and most noteworthy aspect of the Cuban disaster management system is the value placed on human life, which far exceeds the value placed on material goods. Instead of focusing on the cost of damages or the person responsible for repairs, the Cuban disaster preparedness model is almost solely focused on the protection of life.

As the Cuban hosts of the CIP delegation clearly explained, Cuba goes to great lengths to ensure the safety of the entire population, especially those most vulnerable, such as children, the elderly, handicapped, and pregnant. Civil defense members and community volunteers are responsible for personally assisting those in need of special assistance and special shelters are prepared for pregnant women who may go into labor unexpectedly due to the high levels of stress caused by the disaster.

Elements of the Cuban Disaster Management System

- Civil Defense:** responsible for organizing community volunteers, assessing risk and damage, and carrying out local evacuations.
- Early Warning System:** storm alerts happen in three phases, beginning 72 hours before the storm hits.
- Prepared medical staff:** separate shelters are prepared for expecting mothers, and hospitals are clearly and permanently marked for large-scale emergency situations.
- Special Attention to Vulnerable Populations:** prior to hurricane season, local volunteers are made aware of the location and status of vulnerable people living in their areas. When disaster strikes, those identified are assisted in preparation and evacuation.
- Emergency Stockpiles:** food and medical supplies are stored in preparation for hurricane season.

One aspect of the Cuban system that is nearly impossible to replicate in the United States is the guarantee of the replacement of lost or damaged property. After the dangers of the storm have passed in Cuba, a damage assessment is done on a neighborhood basis and repairs are then made, at the government's expense, according to necessity. Hypothetically, all material damages would be repaired or replaced in a timely fashion.

It is not realistic to think that this practice could be copied in the United States. But an important lesson can be learned from the Cubans: the assurance that property will be replaced shortly after a storm reduces stress during evacuation and recovery efforts. Ensuring the replacement of damaged goods and a quick return to normalcy has not been a strength of the U.S. system, due in large part to the role of private insurance companies in handling such claims. However, if citizens were aware of the risks and options in preparing for disasters (various insurance policies available), knew what items were covered or not in certain circumstances, and had the capability to collect on insurance claims more rapidly and efficiently, American citizens would have as much recovery assurance (and equal incentive for decreased stress) as the Cubans have.

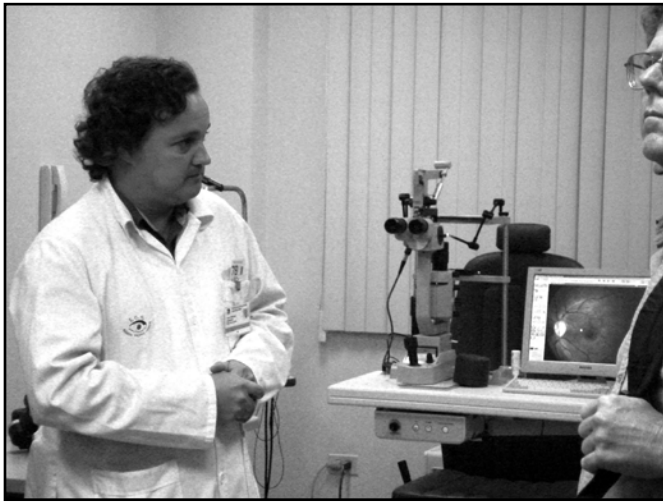
A U.S. campaign aimed at educating the potentially affected populace about the dangers of natural disasters - such as hurricanes - and how best to prepare for them (modeled after the Cuban system), would be a useful tool for the protection of American lives. More standardized emergency evacuation procedures with, for example, clearly marked signs to direct people during the chaos of a storm, could also improve the American response to natural disasters. Greater community involvement, education of the populace before a hurricane strikes and assistance to fellow citizens in reaching safety are all minor improvements that would improve the U.S. emergency management system. Cuba has clearly demonstrated successful planning and implementation in the above-mentioned areas and it is CIP's hope that through further information-sharing fora, these best practices can be exchanged in order to improve the safety and well-being of every global citizen.

IN THEIR OWN WORDS . . .

Conference Participants Share Their Observations

Logically, as both countries stand in the path of hurricanes, it would simply make sense for Cuba and the United States to cooperate as fully as possible in tracking, preparing for, defending against and recovering after them. Each can help the other and there should be an established system for doing so.

Wayne Smith,
Director, Cuba Program
Center for International Policy



Cuban healthcare professionals and medical equipment stand ready for when natural disaster strikes.

Being from New Orleans and a survivor of both Hurricanes Katrina and Rita, I had to ask the dreaded question most on my mind: How do they handle the emotional distress after the disasters? In my area, folks were profoundly affected by post-traumatic stress syndrome, depression and high suicide rates. The Cubans assured me that because the people are so confident that their government will take care of them after a disaster, such emotional devastation is less likely to occur, since they have mental health workers and strong community support for victims, as well as the assurance that their belongings and housing will be replaced if lost.

Randy Poindexter
Founder and Director
NO-MAS

Cuba has shown that poorer countries can, with the right procedures, communication and cooperation, develop methods that cut down remarkably the number of human casualties. Cuban deaths from storms since its independence have greatly lessened because of its education of both professionals and ordinary citizens. In addition, hurricane preparedness is taught in the public schools, beginning in the elementary grades, so that even young children can be an active part of the resistance. This has not only been a practical plan for Cuba, but also a model for all the countries of Central America and the Caribbean.

Jay Higginbotham
U.S.-Cuba Sister Cities Association

One of the most impressive people we met was a local official, a former history teacher, who spoke with great passion about his duty to his community – and to protect every person, especially the most vulnerable – whether it be a diabetic, a single woman with children, an older person confined to a wheel chair.

Jane Barton Griffith
Director of Institutional Advancement
Center for International Policy



Cuban emergency medical specialists at the Latin American Center for Disaster Medicine (CLAMED) speak to the conference delegation.



Cuban meteorologist Dr. Jose Rubiera converses with American hurricane specialist Ivor van Heerden.

The Cuban model for hurricane preparedness and evacuation involves careful planning, support from civic society at the local level, and training which instills in every emergency preparedness worker the philosophy that his or her most important mission is to save lives.

Jane Barton Griffith
Director of Institutional Advancement
Center for International Policy

In answers to the comment that Cuba can manage such evacuations because it has a stronger central government, it was pointed out that Cuba does not have mandatory evacuation. The people are so highly informed about their risk factors that they can be left to evacuate on their own decisions. Thus far, it seems that the people are quite learned about their vulnerability, that they can make the correct decisions without government edicts.

Jay Higginbotham
U.S.-Cuba Sister Cities

The international press has a tendency to distort the facts – forecasters never know when a hurricane will hit and cannot forecast with true accuracy. We are not in the prediction business; we are in the preparation business.

Dr. Jose Rubiera
Chief Meteorologist
Cuban Institute of Meteorology

Previous storm experience has proven Americans must become more involved in educating themselves and their children on how to better prepare for disasters. Citizens cannot rely solely on the government to prepare for them. Many would assume that a communist government does everything for its citizens. However, this is not true. The Cuban government has empowered their people to prepare for and respond to disasters. When the government warns them of impending danger, they listen and respond to instruction.

John Dosh
Chief of emergency management
Pensacola, FL

CIP wishes to thank the Ford Foundation for its support, which made it possible for our delegation to travel to Cuba to confer with Cuban specialists.

FOR MORE INFORMATION ON THIS TOPIC:

- See the April 2008 delegates' impressions, available soon at www.ciponline.org.
- See *Facing the Storms Together*, a CIP report of 2007 Disaster Management cooperation efforts.
- See Oxfam America's 2004 Report entitled, "Cuba – Weathering the Storm: Lessons in Risk Reduction from Cuba."
- See the Cuban Meteorological Institute at www.insmet.cu.
- See the international organization Medical Education Cooperation with Cuba (MED-ICC) at www.medicc.org.
- See the Latin American Center for Disaster Medicine (CLAMED) at www.sld.cu/sitios/desastres.

Cuba Conference Report

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