What can the United States learn from the Cuban model of successfully predicting storms and effectively implementing disaster relief initiatives? This question represented the principal focus of our delegation’s trip to Cuba, led by Galveston Mayor Lyda Ann Thomas and Wayne Smith of the Center for International Policy. As a follow-on to the 2007 working conference hosted by the Center for International Policy as well as the delegation of U.S. specialists that visited the island in April 2008, this particular delegation, with the support of Atlantic Philanthropies, aimed to compare hurricane preparedness and relief efforts between Galveston and Cuba.

The delegation met first with Dagoberto Rodriguez, the vice minister of foreign affairs. As the head of the Cuba delegation at the 2007 hurricane conference in Monterrey, Rodriguez was well-informed on issues of hurricane coordination efforts and stressed cooperation to the mayor, who in turn articulated the importance of furthering understanding on issues of mutual importance. The mayor expounded on the historical similarities between Galveston and Cuba and stressed the primacy of saving lives in Galveston and difficulties associated with rebuilding damaged infrastructure. While the vice minister and mayor agreed on the need to bolster relief efforts in both countries, they also recognized the challenges of overcoming the embargo in furthering cooperation.

The delegation was received by Dr. Guillermo Mesa Ridel, director of the Latin American Center for Disaster Medicine (CLAMED). Dr. Ridel explained the center’s emphasis on the emerging field of disaster medicine, as 243 hospitals and health institutions form an Integrated System for Medical Emergencies (SIUM), corroborating the country’s emphasis on saving lives. Cuba, with the support of Caribbean countries, is bolstering its development of disaster medicine and will host the first Congress on Health and Disasters October 14-15, 2009. Some 100 foreign representatives are expected to attend. Mayor Thomas and Gerald Sullivan, chairman of the Port of Galveston, expressed interest in sending Texas medical personnel to the conference and praised Dr. Ridel on his efforts to develop this emerging area of medicine.

To learn about Cuba’s system of predicting hurricanes, our delegation visited the country’s Meteorological Institute, led by director Jose Rubiera. Although the famous director was out of the country, his assistants at the Prognostication Unit articulated the main function and objective of the weather center. As explained to the mayor and other delegation members, Cuba has 68 weather stations, which help to track the storms and give warning as they approach the island. Weather reports are normally broadcast every six hours, but every three hours as storms approach. The first alerts are sounded 72 hours before likely landfall. Alerts sounded 48 hours in advance are usually soon followed by orders to evacuate ar-
eas in the path of the storms. As we would hear when we talked to those responsible for civil defense, every member of a given community is involved. They know exactly what to do, having periodically practiced evacuations.

Moreover, they asserted that communication and cooperation between the Institute and the Hurricane Center in Miami is frequent and effective. For example, the two centers have an almost constant exchange of information and U.S. weather planes are permitted to fly through Cuban airspace, their reports being readily provided to the Cubans. Indeed, the kind of cooperation between the two weather services is what we should want to see between all U.S. and Cuban entities involved in defense against hurricanes and other natural disasters.

Dr. Jose Rubiera, Director of the Cuban Meteorological Institute

Further information concerning the medical field was provided by Kathleen Vickery, the editor of MEDICC, a peer-reviewed journal founded in 1997. The primary purpose of the journal is to facilitate increased cooperation between Cuba and the international community as well as increase health care funding. The U.S.-based Non-profit group also supports training programs for underserved areas and provides journals to libraries across Cuba. Despite the negative impact of former president Bush’s decision to eliminate short-term travel to Cuba, the group has exchange programs in Honduras and South Africa and remains the only English-language health publication in Cuba.

The delegation then went to the Latin American Medical School (ELAM). The long-time vice rector, Dr. Midalys Castilla Martinez, informed the delegates that the school had been founded in 1999. It had been Fidel Castro’s idea and a follow-on to Cuba’s efforts to give medical assistance to Central America following a hurricane there in 1998. They now have some 1,933 foreign students at the school, going through the first two years of a six-year course. After those first two years, they are scattered to other medical schools and hospitals for the next four years of studies and internships.

There are now 10,000 foreign students in the system, all supported by the Cuban government. The first graduation took place in 2005. Since then, 5,600 have graduated from the system and returned to their home countries. Since the beginning, emphasis has been on disaster medicine. Most of the students come from low income families. The only thing Cuba asks of them is that they go back to serve their communities. Most are very dedicated and have done so. They must, of course, comply with the rules and regulations of their own countries.

Dr. Martinez said she was proud to say that another 1,500 students will graduate this year, and ELAM has been accredited by the California Board of Medicine. Mayor Thomas congratulated her for both accomplishments. Our group then met with six of the American students, all of whom said they were immensely enjoying and benefitting from their studies in Cuba.

**Principal Components of Cuba’s Disaster Relief Plan**

- **Citizen engagement** - Participation of civilians in preparing for natural disasters through training and education.
- **Coordination** - Disaster relief plans are crafted with the participation of government leaders, civilian defense personnel, community organizations and local political leaders.
- **Maintaining social services** - Cuba provides vital resources so that hospitals, schools and other services remain open during a natural disaster.
- **Vulnerability identification** - Each municipality identifies citizens and infrastructure deemed vulnerable, thus easing the evacuation process.
- **Protecting/guaranteeing property** - The Cuban government helps citizens protect personal items during evacuations and ensures that damaged property will be replaced at no cost.
Francisco Perdomo, the secretary of the Provincial Assembly of Peoples Power of the City of Havana, received our group in the offices of the municipality of Vedado-Malecon. He stressed that given climate change and that we both live in the path of these hurricanes, we face a growing threat and need to cooperate to meet it. Mayor Thomas and Gerald Sullivan both agreed. We face the same problems and are disposed to work closely with Cuba in confronting them.

Civil defense members then explained how the municipality is evacuated. They showed us pictures of the area under five feet of water. In those circumstances, all inhabitants living on the ground floor must be evacuated, or in some cases, room temporarily with those on floors above. Military and police are available to help move furniture to upper floors, or to move it out of the area completely. Their presence, moreover, reassures people that their property will be protected. Given the solid construction of most of the buildings, it would be most unusual if everyone had to be evacuated. Rather, evacuation is usually restricted to those on lower floors. During the last evacuation, for example, of the municipality’s 14,372 inhabitants, only 250 were evacuated, while 7,261 moved temporarily into other quarters, usually on floors above. Everyone knows what to do. All citizens, young and old, take part in the annual two-day *meteorological Disaster Preparedness and Response Exercise* which tests national and local readiness with participatory activities relevant to the respective localities.

Our delegation visited the Enrique Cabrera Hospital, the first hospital (1961) established after the revolution, which provides medical care at no cost. The hospital consists of 615 beds, 19 wards and 2,300 staff members. It has an annual budget of $27 million. In addition to providing medical care, the hospital also staffs 173 professors who conduct 12 different lines of research on new medical training programs and teach undergraduate courses to students from Cuba and abroad. The success of the hospital in providing essential medical care is unequivocal, as the infant mortality rate of 3.02/100,000 births is considerably lower than the Havana rate of 4.7 and national rate of 5.2. Additionally, hospital staff has performed 12,772 surgical procedures since 2008, mostly under the auspices of Operation Miracle, a joint program with Venezuela instituted in 2004.

As explained by hospital personnel, the main function of Operation Miracle is to provide eye surgeries (e.g. cataract and refractory) to patients throughout Latin America at no cost. Surgeries are conducted mainly by Cuban medical personnel who also provide training and logistical support. The results of the program are rather auspicious, as 1.5 million patients have been operated on in 35 countries, including 40,619 patients in four-and-one-half years at the Enrique Cabrera hospital alone. To date, 62 eye-care clinics have been established across the region while Cuba has secured medical cooperation with 103 countries with the participation of 185,000 medical professionals, including 42 hospital personnel operating in 8 countries. In turn, the hospital functions as a vital component of Cuba’s disaster relief apparatus.

While at the hospital, the delegation also met with members of the country’s elite medical emergency brigade. Perhaps the most impressive aspect of the country’s health care apparatus, the Henry Reeve Brigade has provided immediate disaster relief services across the world since its inception in 2005 (see below). The establishment of this distinctive medical brigade merely reflects the country’s rich history of providing disaster relief, beginning in 1960 when 35 Cubans were dispatched to Chile after a devastating earthquake. Subsequently, Cuban doctors have been dispatched to more than 20 countries in Latin America, Africa and Asia to provide disaster relief, including setting up temporary clinics, providing medicine and training medical personnel to assist future victims. After hearing of the impressive relief efforts of the medical brigade, the mayor expressed interest in learning more about Cuba’s relief efforts and how the country generally protects its population.
during and after a natural disaster.

Proactive and Prolific: How Cubans Prepare for Natural Disasters

Hurricanes are endemic to Cuba’s history. The island’s location between the US Gulf Coast and Windward Islands puts it in the path of devastating and frequent hurricane strikes. In particular, the date November 9, 1932, still resonates in the minds of many Cubans, as perhaps the country’s most destructive storm (until then) struck the island near Camagüey, with wind speeds of 155 MPH and massive tidal waves. The aftermath of the storm was staggering, with nearly $40 million in property damage and over 3,000 causalities, considerably more than a 1926 storm that struck Havana and killed nearly 600 people. The revolutionary government, in its incipient years of existence, began to reform the country’s disaster management apparatus, shifting the focus to its present goals of saving lives and protecting property.

Rescue workers respond immediately in helping citizens evacuate after a hurricane.

Although the Cuban government successfully shifted its focus to saving lives and protecting property, the country’s system of tracking and predicting hurricanes, for a time, lagged far behind the U.S. National Weather Service. Regrettably, the embargo against Cuba precluded US weather officials from assisting their Cuban counterparts in hurricane tracking, perpetuating inconsistencies. Nevertheless, significant improvements were discernible by the 1980s, mainly as a result of improved technology, better communication with citizens and investment in meteorological centers for predicting storms. A nightly broadcast of weather information beginning in 1981 helped augment the government’s principal objective of ameliorating causalities through dissemination of vital information to its citizens. In fact, by 1999, the Meteorological Center of Cuba, once considered irrelevant and unreliable, was predicting storms with an accuracy rate of 89-92%, the same as the United States and Europe. Thus, technological improvements coupled with increased communication and citizen engagement have enabled the Cuban government to better prepare the population in advance of a hurricane.

Despite considerable improvement in Cuba’s disaster preparedness apparatus, coordination on hurricane detection and relief efforts between Cuba and the United States remain negligible. In 1900, the Cuban government desperately attempted to warn the United States Weather Service of an impending storm poised to strike Galveston, Texas. Regrettably, the National Weather Service did not heed this warning, apparently due to envy and resentment of Cuba’s keen ability to predict hurricanes. As a result, over 6,000 people lost their lives in what remains the worst natural disaster in United States history. Paradoxically, despite the geographical proximity of the two countries, trivial differences and enduring political strife continue to obstruct essential cooperation on an issue of mutual interest.

Before the Hurricane Strikes

In contrast to the United States, where concrete preparation for a hurricane is often conducted devoid of citizen engagement or advanced planning, preparation in Cuba is a year-round event. As previously noted, weather information is broadcast on state-run television and radio continuously, including vital hurricane information in preparing citizens well in advance. In addition, all adults in Cuba must undergo a civilian defense training program, designed to educate adults on how to assist in evacuation procedures and streamline an intricate evacuation process involving the military, government, provinces and local neighborhood groups. Every May, Cuban citizens are required to participate in a mandatory hurricane drill, in which evacuation procedures are simulated and government officials are able to better identify vulnerable citizens, an important component of hurricane preparation in Cuba. As delegate Nick Kralj asserted, “these are people who obviously don’t have the same resources we have and yet are able to evacuate millions of people.”

How are the Cubans, with considerably less resources, able to successfully evacuate their citizens and mitigate casualties? The Cuban system of preparation and evacuation is predicated on a few fundamental principles, including coordination, mobilization, property guarantees and population targeting. Cuban hurricane warnings reach 96% of TV audiences and 97% of radio listeners, who are adequately prepared
to evacuate based on education and training. Subsequently, the Cuban government coordinates with Civil Defense leaders, the Ministry of Public Health, Municipal People’s Councils and local organizations in quickly mobilizing the population to be ready to evacuate. While most citizens seek shelter with neighbors or family members residing in safer areas (an example of the intrinsic Cuban value of “solidarity”), many others are evacuated to other areas of the country or placed in government-run shelters.

While coordination and mobilization are prevalent in disaster relief planning in the United States, the protection and guaranteeing of property truly distinguishes Cuba. Although the country presently has the capacity to construct just 50,000 homes per year, in part due to the scarcity of building supplies caused by the embargo, the government promises its citizens protection of property. In other words, government officials will help move one’s furniture and personal belongings to higher ground and promise to eventually rebuild homes damaged or destroyed by the hurricane. While this is certainly no simple task for a country in which nearly 500,000 housing units were damaged or destroyed since 2008, guaranteeing the protection of property is critical in aiding the evacuation process.

In addition to simply guaranteeing property, a cornerstone of disaster preparation in Cuba entails targeting citizens and property deemed vulnerable. While it may appear to be simply implausible to identify every vulnerable citizen and housing unit in the country, civil defense leaders working with provinces and municipalities, compile updated and intricate records, mainly based on risk studies. Subsequently, each of the country’s 14 provinces and 169 municipalities devises a disaster plan, involving potential property damage, vulnerable citizens, as well as fiscal and infrastructure susceptibility. The principal purpose of each local design plan is to identify risk (danger and vulnerability) through careful statistical analysis of the population, economic sector and infrastructure of each municipality. Namely, each municipality compiles detailed biographical information of all citizens on an annual basis, including name, age, physical needs (i.e. illness), special services required, and the number of infants, pregnant women and persons with disabilities. For instance, the municipality of Vedado-Malecon, situated along Havana’s picturesque coast, is 11.8 sq./k, has a total population of 174,329, consists of 108 districts and possesses 1,564 economic targets deemed vital. Accordingly, municipal leaders use this data to better coordinate relief efforts through targeting vulnerable citizens and housing structures. Through gathering such detailed information, authorities are quickly able to determine, in advance of the storm, precisely which citizens require special assistance versus those who simply need assistance in securing personal property.

Another important component of disaster relief plans is the identification of vulnerable housing units and infrastructure. Specifically, each municipality calculates the correlation between the severity of a natural disaster and number of housing units threatened and devises the most effective means of responding proactively to protect infrastructure. Areas identified as vulnerable are provided with electrical generators, drinking water and additional medical personnel in advance of the storm’s approach, as members of the community are bestowed with the responsibility of providing such essential services. In turn, Cuban citizens are informed, empowered and involved, through intricate planning, in hurricane preparation well before any natural disaster occurs.

Natural Disaster Strikes: Cuba’s Immediate Response

Despite careful and detailed planning in advance of a hurricane or other natural disaster, the country’s immediate response largely dictates effectiveness in saving lives and property. As noted previously, each municipality specifically identifies vulnerable citizens and housing structures in order to address special needs during the evacuation process. Accordingly, strategic locations, including hospitals, bakeries, food processing centers, hotels, telephone services and educational centers are provided with power generators that operate independently for up to 72 hours.
Thus, in the wake of a natural disaster, hospitals can remain open to provide vital medical care, food distribution can continue unabated and telephone centers can maintain communication across the island. As the mayor of Galveston elucidated to civil defense officials, the United States, in contrast to Cuba, often closes hospitals and other vital social services essential to those who do not evacuate, thereby threatening vulnerable members of the population. Conversely, the islands 243 hospitals and health institutions remain open during a natural disaster while community doctors provide immediate medical care to those in need.

Assisting Victims After the Storm: Cuba’s Distinctive Medical Apparatus

In addition to preparing for natural disasters and providing immediate relief, the Cuban medical system is renowned for its ability to serve victims of natural disasters. Assisting victims long in the aftermath of a natural disaster is a cornerstone of Cuba’s disaster relief strategy and is indicative of the primacy of health care as a fundamental human right in Cuban policy. Assistance to victims of natural disasters and those with general medical needs are conducted through the country’s extensive hospital system as well as elite medical brigades specifically trained in the emerging field of disaster relief medicine.

In the wake of Hurricane Katrina’s devastating impact on the U.S. Gulf Coast, the aforementioned Henry Reeve Brigade was established on September 19, 2005 to provide immediate medical assistance to victims in the United States. After learning of the storm’s landfall near New Orleans, Cuba immediately sent a message of condolence to Washington and offered immediate medical assistance. Accordingly, 1,586 medical doctors were convened from all 14 provinces in just 24 hours to assist hurricane victims, pending U.S. approval. Paradoxically, the U.S. State Department rejected the Cuban government’s gesture, citing “national security concerns,” thereby precluding the medical brigade from providing immediate disaster relief to victims and potentially saving lives. This rebuke, although given scant attention in the U.S. media, was treated with great indignation by the medical brigade, who were prepared to assist victims despite political differences.

Although the medical brigade was ultimately prohibited from assisting victims of Hurricane Katrina in the United States, their work abroad has been admirable. Just one week after Katrina struck the U.S., the medical team was dispatched to Guatemala, where they assisted nearly 600,000 victims affected by a hurricane. Thereafter, the medical brigade traveled to Pakistan after the country was impacted by a deadly earthquake. In response to the widespread humanitarian crisis that ensued, the brigade of 2,564 medical personnel helped construct 32 field hospitals while assisting an astounding 1.7 million patients (73% of all victims). The brigade members attributed their success to employing preventive techniques, learning local dialects, forestalling epidemics and averting a “second wave of deaths” after the initial disaster. Thus, the medical brigade’s emphasis on preventive techniques parallels the country’s intricate disaster relief model predicated on proactively reducing civilian casualties.

The path of Hurricane Ike, as pictured above, follows that of many storms to strike both the United States and Cuba

Prospective Application of the Cuban Model in the United States

For the U.S. to draw upon Cuba’s disaster and rescue models remains problematic. While many skeptics dismiss the applicability of the Cuban model, given considerable political differences and the inability of the United States government to stipulate mandatory evacuations, many elements of the Cuban model could be successfully replicated in the United States. Namely, the United States would greatly benefit from Cuba’s emphasis on protecting property, providing uninterrupted
social services, engaging the population in hurricane preparation and relief as well as furthering collaboration with the Cuban government on issues of mutual importance.

Perhaps the most salient aspect of the Cuban disaster relief model that should be emulated by U.S. policymakers is an emphasis on citizen engagement. Although the government plays a prominent role in disaster management, every citizen plays a fundamental role in preparing for natural disasters and assisting in relief efforts. In turn, a mobilized and informed population is better equipped to help authorities execute disaster relief efforts and provide immediate assistance to those with special needs. Moreover, an informed populace, more keenly involved and aware of the risk a natural disaster poses, will be more likely to evacuate voluntarily. By contrast, evacuation processes in the U.S. are often ignored by intractable residents.

Based on geographic proximity and a shared history, U.S. and Cuban policymakers must further collaborate on issues of mutual importance. This point was in fact articulated at every meeting our delegation attended, as Cuban leaders aspired to put aside political differences in the interest of savings lives through greater cooperation on hurricane tracking and relief efforts. As the prospect of a rapprochement in U.S.-Cuban relations becomes more likely, it is critical to put aside frivolous ideological differences in the interest of coordinating disaster relief efforts and saving lives.

**Cuba and Hurricanes Ike and Gustav**

- $9.4 billion in total property damage (2008 USD)
- 450,000 homes impacted
- At least 200,000 Cubans left homeless
- 35% of all crops eradicated
- Nearly 3 million people evacuated
- Only 7 reported deaths

**Delegation Participants**

**Lyda Ann Thomas:** Mayor of Galveston, Texas since 2004. Mayor Thomas previously served on the Galveston City Council prior to becoming just the third woman in the city’s history to be elected mayor. During her tenure as mayor, Lyda Ann has received widespread praise for her proactive and prudent handling of hurricane evacuation procedures.

**Elise Hopkins Stevens:** Assistant to Mayor Lyda Ann Thomas. A former college teacher, Elise is currently a top assistant to the mayor and advises the mayor’s office on pertinent issues.

**Gerald Sullivan:** Chairman of the Board of Trustees, Port of Galveston. Presently, Gerald presides over one of the Gulf Coast’s busiest ports and is a strong advocate for bolstering economic development around the port.

**Nick Kralj:** Member of the Galveston County Beach Erosion Task Force. As a fixture in Texas politics, Nick has participated in several delegations to Cuba in advancing cooperation between Cuba and the United States on humanitarian and environmental issues.

**Elliot Kralj:** Member of Galveston County Beach Erosion Task Force and son of Nick Kralj. As a task force member, Elliot has also worked assiduously on promoting collaboration between Cuba and Texas on issues of mutual importance.

**Randy Pointdexter:** Founder and director of the New Orleans-Mariel Amistad Society (NO-MAS). Randy is considered to be an expert on Cuban affairs and has visited the island on eleven separate occasions. She also participated in our earlier meetings with the Cubans on hurricane defense.

**Wayne Smith:** Senior Fellow at the Center for International Policy and former chief of mission at the U.S. Interests Section in Havana. Widely considered to be one of the country’s foremost experts on U.S.-Cuban relations, Wayne has led several delegations to Cuba to facilitate improved collaboration on hurricane preparation and relief efforts.

**Jonathan Keyser:** Assistant to Wayne Smith, Center for International Policy. Jonathan provides analytical and logistical support to the Cuba Program.

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