

Lessons in Risk Reduction from Cuba

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Introduction

A snapshot of Cuba's disaster preparedness in action, (excerpted from the article below)

“Staccato bursts of hammer fall punctuated the air, every available jug, bucket and bottle was filled with potable water and radios and televisions beamed the latest from the Cuban Institute of Meteorology into homes and workplaces countrywide. Mean while, evacuation centers were readied to receive tens of thousands, roofs were cleared of debris, farm animals were transferred to safe areas and citrus was picked at lightening speed.

So went the several days of preparation for Hurricane Ivan, the most powerful hurricane to hit Cuba in 50 years and the fifth most powerful to ever strike the Caribbean. Despite sustained winds of over 124mph and nearly 2 million people evacuated, there was zero loss of life and no injuries, leading the United Nations to praise Cuba as a model for the world in disaster preparedness.

According to Salvano Briceño, Director of the UN International Strategy for Disaster Reduction, “the Cuban way could easily be applied to other countries with similar economic conditions, and even in countries with greater resources that do not manage to protect their population as well as Cuba does.”

Connor G., “UN Lauds Cuba as Model of Hurricane Preparedness” in *Medic Review* 2004 (excerpted from the article)²

Cuba sits squarely in the path of hurricanes blowing up from the Caribbean into the Gulf of Mexico. According to the Cuban National Information Agency, Cuba faced 48 hydro-meteorological disasters between 1985 and 2000. A major hurricane hits the country every few years as a result of which homes are destroyed, coastal areas flooded and agricultural production damaged, but very few people die. Between 1996 and 2002, six hurricanes hit Cuba. Lili a category 2, in 1996, Georges a category 3-4 in 1998, Irene a category 1 in 1999, Michelle a category 4 in 2001, and Isidore and Lili in 2003, both category 2s. The total number of fatalities in Cuba for these six hurricanes was 16 people out of the total of 665 deaths they collectively caused³. What is Cuba doing right? How has a small poor country with few resources successfully curtailed the number of deaths from frequent and violent hurricanes? What can other countries learn from Cuba to better protect the lives of their populations from hurricanes? This case study looks at the key elements of Cuba's disaster risk reduction system that could be adapted in other countries to improve risk reduction and protect lives.

There are increasingly compelling reasons for other governments and organizations to learn from the Cuban example. In particular, countries in the global south with fewer resources need effective, low cost, low tech disaster risk reduction strategies. According to the

1. Originally published as: Martha Thompson with Izaskun Gaviria Cuba: Weathering the Storm, lessons in risk reduction from Cuba (Boston, Oxfam America 2004)

² http://www.medicc.org/publications/medicc_review/1004/index.html, as retrieved on Dec 15, 2006 20:43:48 GMT

³ Thompson and Gaviria, 2004, pp. 8-9.

Intergovernmental Panel on Climate Change (IPCC), global warming is on the rise, and poor countries in Africa, Asia and Latin America are most vulnerable to the devastating natural hazards such as droughts, floods, heat waves and violent storms that mark its early stages. Yet, the case of Hurricane Katrina in the US Gulf Coast in August 2005 was a bleak reminder that, even in the case of wealthy countries, unless the disaster response system is specifically targeted to help the most vulnerable to reach safety and security and addresses the particular obstacles they face, the poor and disenfranchised are literally left sitting on the rooftops.

Central to Cuba's successful risk reduction is the government's stated priority that its fundamental commitment during a hurricane is to save lives. The country's risk reduction plans and disaster preparedness structures support this commitment to save lives through the following:

- A disaster preparedness plan, which incorporates a specific focus on the most vulnerable, provides for monitoring their situation and adapts plans to address their specific needs.
- A national civil defence structure which uses local government at the provincial, municipal and local levels for disaster preparedness and response.
- Recognition of the vital roles of local knowledge and local leadership in disaster risk reduction.
- Practical effective lifeline structures, with particular emphasis on mass evacuation and use of safe secure shelters.
- A "culture of safety" which creates the trust and awareness necessary to motivate people to cooperate and participate in risk reduction.
- Citizen participation by incorporating community mobilization in a three tiered system of participation in planning, community implementation of lifeline structures and the creation and building of social capital.
- A unique system of government and socio-economic model that has consistently addressed risk reduction through policies of social and economic equity and poverty reduction.

Since 75% of Cuba's 11 million people are urban and only 25% rural, its disaster preparedness plan has a strong focus on urban areas. In both cities and rural areas, the Cuban model builds on social organization to build community based disaster management into the national risk reduction program.

Background

Cuba is the largest of the Caribbean islands with a population of 11.3 million people. It sits squarely in the path of hurricanes coming out of the Caribbean into the Gulf of Mexico. A socialist government commanding a highly centralized economy has held power for the last 47 years under a one party political system. The government has emphasized social and economic development, prioritizing an equitable distribution of resources, universal access to social services and a narrower rural-urban gap.⁴ The government is the sole provider of social services, plans and directs the economy, employs the majority of the population and controls most of the market. Cubans are highly educated with a strong sense of solidarity and social cohesion, extensive experience in mobilization and highly organized through mass organizations, professional groups and political structures.

⁴ Uriarte, 2002

Cuba suffered a major economic crisis in 1993 after the Soviet Union collapsed. It lost a principle trade and aid partners, ushering in a period characterized by scarce resources, lack of hard currency and limited foreign aid. Since the nadir in 1994, the government has steered a course for economic recovery with a series of economic reforms which have provided a slow but uneven recovery, creating economic disparities in a previously relatively egalitarian society.

Cuba's economic crisis has affected people's vulnerability to the risk of hurricanes in divergent ways. Vulnerability to material damage has risen, particularly in terms of housing and the infrastructure of agricultural production. Deteriorating housing stock is more vulnerable to storm damage and housing shortage affects people's access to secure housing after a storm. The economic crisis has negatively impacted the ability of the agricultural sector to protect its production from hurricane damage.

The Cuban government now has fewer resources to deploy in times of disasters and the economic crisis has put considerable stress on its risk reduction systems. Surprisingly, the crisis has not affected Cuba's success in protecting the lives of its population from hurricanes. Saving lives continues to be the government's priority in the face of hurricanes. Indeed, over the last few decades, the social and economic policies that the Cuban government has pursued have effectively reduced the population's vulnerability to hazard including:

- Universal access to services such as health, education and infrastructure;
- Policies to reduce social and economic disparities which inevitably reduce vulnerability;
- Considerable investment in human development which has resulted in a wealth of trained professionals;
- Government investment in infrastructure in both rural and urban areas to minimize the occurrence of uneven development and provide the population with a range of resources that can be used in disaster mitigation, preparedness and response; and
- A form of social and economic organization which promotes solidarity, cohesion and cooperation, creating a social capital for risk reduction.

These policies have also produced "multiplier effects" that enhance risk reduction in many ways. According to UNICEF's country statistics, the adult population is 100 per cent literate and therefore can access educational materials about disasters. All children go to school until grade 9, meaning that they are exposed to disaster preparedness in school curricula as a key vehicle to education about disasters. There is an adequate road system in the country that facilitates speedy evacuation and building codes are enforced, which reduces the element of highly vulnerable substandard construction. Approximately 95% of the households in the country have electricity and therefore can access information about disasters through radio and television.⁵ Finally, the intricate web of social, professional and political organizations in the country provide organizational structures that can be quickly mobilized in the event of a disaster.

⁵ Reinmuller, 2002

The Cuban model for hurricane risk reduction

Good governance and investment in tangible and intangible resources: a powerful combination

Dr. Ben Wisner, a specialist in risk reduction, has a special interest in how different forms of governance affect risk reduction and disaster preparedness. Central to good governance for risk reduction is a clear political commitment by public authorities to safeguard life. All other efforts such as mobilization of resources, creation of structures and legislation and education of the population at risk are secondary to this most basic commitment to saving lives. Dr. Ben Wisner drew up the “golden dozen” or twelve key features of good governance in risk reduction⁶ :

- Political commitment to risk reduction
- Social cohesion and solidarity
- Trust between authorities and civil society
- Good coordination, information sharing and cooperation among institutions in risk reduction
- Attention to the most vulnerable population
- Attention to lifeline structures (concrete procedures to save lives, evacuation plans etc)
- Investment in human development
- An effective risk communication system and institutionalized historical memory of disasters, laws, regulations and directive to support all of the above.
- Investments in economic development that explicitly take potential consequences for risk reduction into account
- Investment in social capital
- Investment in institutional capital (capable accountable and transparent government institutions for mitigating disasters)

Cuba has mechanisms to incorporate all of these features of good governance in its risk reduction system. In putting good governance for disasters into place, Cuba has installed the necessary tangible resources; a strong well organized civil defence, legislation which enshrines disaster mitigation, preparedness and response in law, an effective early warning system understood by the entire population, well equipped and trained rescue teams, emergency stockpiles, a well organized shelter system and a range of other resources for effective disaster response. These however, by virtue of their existence, do not guarantee successful risk reduction. The Cuban government is unique in that it has also paid an equal amount of attention to creating an intangible “culture of safety,” guaranteeing that the population is aware of the country’s risk reduction system, educated in risk consciousness and disaster mitigation, able to use the lifeline structures in an emergency and actively participate in disaster preparation.

Disaster mitigation

Cuba’s approach to disaster mitigation includes national elements such as a legal framework, land use regulations, physical planning, research and work on climate change and the promotion of a culture of safety at the grassroots levels.

⁶ Wisner, 2001

1. National level resources for disaster mitigation

- **Laws and legal frameworks:** Cuba's legal framework enshrines the disaster mitigation, preparedness, response and recovery measures and structures in law and those laws, in turn are carefully observed. The formation of the Cuban Civil Defence (hereafter referred to as the National Civil Defence) was approved in 1966. A 1976 mandate requires that all adult citizens receive civil defence training. In 1997, Legal Decree 170 was passed, specifically describing the goal of protecting the population, the economy, and the environment from the destructive effects of natural disasters and other types of catastrophes through a combination of prevention, preparedness, response and recuperation.⁷ The laws charge the High Command of the Cuban National Civil Defence with overseeing Cuba's compliance with civil defence measures and all relationships with international aid and cooperation during times of disasters. Finally, all the disaster/civil defence legislation clearly defines a centralized decision making structure during emergencies, assigning roles and authorities.
- **Land use regulations, building codes and physical planning:** The Cuban legal system has created physical planning codes and land use regulations firmly embedded in government structures through the Institute of Physical Planning (IPF) and the National Housing Institute and consistently enforced. The IPF's goal is to reduce the technical vulnerability of physical structures and all new constructions must confirm to regulations before they are built. The government closely monitors populations in high risk areas of the country, with special attention to those situated less than one meter above sea level or within 1000 meters of the sea. However, government implementation of this has been difficult to assess, and the economic policies to develop beach tourism have the potential to undermine this aspect of risk reduction.
- **Research, information and Meteorology:** Cuba began work on risk reduction and adaptation to climate change in 1991. The National Group on Climate Change is organized through the Cuban Institute of Meteorology in the Ministry of Science, Technology and Environment. The Cuban Institute of Meteorology monitors, detects, investigates, tracks and disseminates information about developing meteorological change, including hurricanes and sea conditions.⁸ Once a hurricane threatens, the institute is in charge of informing the public of all meteorological developments. In addition, Cuba has a range of research centers, many of whose work shapes disaster mitigation for a wide range of hazards. This includes specific research on improving protection measures for the economy and the population from natural and technological disasters.

The elements listed above contribute to the “endoskeleton” of Cuba's risk reduction program. They provide the national institutional framework for disaster preparedness.. However, many countries develop and implement legal frameworks, building codes, physical planning, research and meteorological centers as part of their overall risk reduction. What makes Cuba's system unique is how disaster mitigation and preparedness at the community level help save lives.

⁷ Thompson and Gaviria, 2004, p.24

⁸ Rubiera, 2001

2. Enhancing disaster mitigation at the community level; developing a culture of safety

“About 700,000 people [in Cuba] were victims of Hurricane Michelle but only four or five people died and just eight were injured. In the case of Isidore, only one person was reported dead. ... The Cuban methodology of community mobilization is becoming the standard for the whole Caribbean in terms of its community based training program.”

Xavier Castellanos Disaster Preparedness Delegate at the International Federation of the Red Cross and Red Crescent; Port of Spain , Trinidad April 2003.

Research conducted for Oxfam America has identified high levels of citizen trust that the government will prioritize safeguarding lives, based on experience to date. This trust is key in getting people to utilize lifeline structures during times of emergency. In order for citizens to work on reducing their own risk, they must be confident that essential systems function and necessary resources, such as an emergency warning system, transport for evacuation, shelter and medical services, exist, are secure and easily accessible.⁹ This adds up to a “culture of safety” where mechanisms and procedures exist to reduce people’s vulnerability to disaster and people are both aware of and follow them.

- **Education:** The Cuban government constantly reinforces education on risk reduction through the formal education system, the workplace and public education to create the “culture of safety”. Disaster prevention, preparedness and response are part of all school curricula and in many university curricula¹⁰. There is routine training on risk reduction in institutions and workplaces. The media runs programs and broadcasts regular messages about risk reduction, disaster mitigation and preparedness.
- **Community organization and social capital:** Cuba is a highly organized society with dense social networks that provide ready-made networks of communication. People may have memberships in several mass organizations and professional organizations which intersect and cross over neighborhood, professional and workplace spheres. Such social organization builds knowledge and creates cohesion among different groups and actors which strongly enhances cooperation in times of emergencies. This is in contrast to many other societies where formal organization is limited, forcing reliance on informal organization or on social networks detached from the state.

Disaster Preparedness

Cuba’s two key national structures for disaster preparedness have been crafted to combine centralized authority and resources with community level participation. The aim of this is to facilitate the utilization of local knowledge in national structures and to encourage the active participation of citizens in disaster preparation.

National civil defence

The High Command of the National Civil Defence directs the National Civil Defence and implements disaster preparedness, risk reduction and immediate disaster response procedures (I changed the above to make it decipherable) Most countries have civil defence institutions.

⁹ Villegas and Norba, 2002, p. 5

¹⁰ Llanes Guerra, 2003

What makes the Cuban structure so unusual is its organizational structure, which builds on governmental and administrative structures already in place. By law, all heads of provincial assemblies and municipal governments are also the provincial and municipal Civil Defence directors. They are in charge of organizing, coordinating, and monitoring all work related to prevention, mitigation, emergency response and reconstruction in their area.

This creates both a centralized decision making process, which is key for emergency situations, alongside a decentralized implementation process based on local governments which have been consistently involved in disaster preparedness on an annual basis.

An effective communication system

Cuba has developed an effective communication system for disaster preparedness that emphasizes the following:

- A clear decision making structure for disaster preparedness and response that everyone understands.
- Political will to act on and disseminate information to the general population through designated public communication channels.
- A clear, consistent and easily understood package of information on the progress of a hazard and the measures to safeguard lives.
- Alternative system of communications in case power lines are affected by a hazard.

3. Bringing disaster preparedness to life in the community

The Cuban model is heavily weighted on strengthening the grassroots understanding of procedures and participation in the measures of Civil Defence in times of emergency.¹¹ Since Cuban law converts the local government leadership into the civil defence leadership when a disaster hits, people take orders from leaders they know, and who have a deep knowledge of personalities, dynamics and strengths and weakness of the areas for which they are responsible. The Civil Defence's reliance on local leadership optimizes local knowledge, strengthens cohesion and enhances participation at the community level.

As previously discussed, the Cuban population is educated in disaster preparedness through media messages, the Cuban Red Cross and formal education in school, all of which form the "Culture of Safety". In addition there are three community level exercises that involve a significant proportion of the population in direct practice and training for emergency preparedness, community risk mapping, the updating of community plans and the national simulation exercise. These activities are discussed below.

Community risk mapping

Risk mapping takes place at every level of government in Cuba. At the community level, it is done by people who live in the neighborhood such as the family doctor or representatives for the mass organizations. The meticulous, on-going risk mapping is the mortar in the wall of Cuba's risk reduction.

A neighborhood representative from the Cuban Women's Federation (FMC) in a district of Havana explains in her own words how community leaders identify and address vulnerable women's special concerns:

¹¹ Jose Llanes Guerra and Madelyn Montes de Oca Dias. 2

“I am responsible for this part of the neighborhood.” she said briskly “If a hurricane hits, I know that inside one multi-family unit is an old woman in a wheelchair who is going to need help to leave. I have 11 single mothers on second and third floors of apartment buildings with children under two who will need more support to evacuate and special needs in the shelters. I have two pregnant women, one on that block and one on this one, who will need special attention.”¹²

This basic risk mapping for vulnerabilities is a simple census of who will need additional help for evacuation and who could be assigned to provide that help, enhanced by the fact that the FMC leader knows these people as neighbors. When the time comes to update the emergency plan every year, the Committee for the Defence of the Revolution (CDR) at the neighborhood level collates this information from the relevant actors and puts it into that year’s community emergency plan.

This annual community level risk mapping is key to pinpointing particular vulnerabilities of community members. The community risk mapping incorporates the reality that certain sectors of the population are more vulnerable to disasters and will need more support to avoid exposure to hazard. Once the risk mapping has been completed in an urban neighborhood, it is clear who will need to be evacuated, who will need transport, who will need special help. This risk mapping is then used to update the plan on an annual basis and assign resources to make sure vulnerable populations have the necessary support for evacuation to adequate shelter.

Updating the community plan

All the information gathered in risk mapping from the national to the community level is used to update Cuba’s national emergency plans which are updated every year. Response to comment; the plans are reviewed and updated at all levels every year, beginning at the municipality level and moving up through the provinces and then to the national level. The overall plan includes a composite of the municipal and provincial plans. Workplaces, neighborhoods, cooperatives ministries etc update their plans every year as well. Every workplace and sector of the population has an emergency plan. This is a working document with concrete procedures to be followed at all stages of a disaster. The national plan is built up from the provincial plans, which are collated by city and county plans which in turn are composed of neighborhood, institution, business and organization plans. Each component participates in updating its plan on a yearly basis as exemplified in the box below.

When government ministries, institutions and organizations at the federal, state and municipal levels map risks, they also map resources and assets as part of disaster preparedness. They tally up all the resources they can mobilize for preparedness, response and recovery and this information is incorporated into the emergency plan.

When the plan is updated, the information from the community mapping is used to identify those at risk, the transport needs for evacuation, structures that can be used as shelters, and expected resource needs. The system encourages inter-institutional cooperation in pooling and distributing resources.

¹² Miramar delegate for the Cuban Women’s Federation, personal interview, March 2003. Interview March 2003 by author

The yearly update of the emergency plan of the city of Cienfuegos

In a detailed interview with the researchers in March 2003, the current Secretary of the Commission of Evacuation and Students in the Cienfuegos department of the National Civil Defence, Jose Castro, who has worked in the Civil Defence in Cienfuegos since its creation, explained his experience in the development and use of emergency plans.

“Each year on December 1, as soon as the hurricane season ends, Cuban authorities at every level begin to update the emergency plan and finish it in March or April. We look at what happened in the year, particularly if there has been a hurricane... what worked, what didn’t and make adjustments. We look at the provincial maps, at the areas vulnerable to flood, the weak houses, etc.

Beginning at the CDR level, authorities update the plan in their neighborhoods. The CDR members write down the houses that may be vulnerable in their census, including the name of the family and number of children. They note who goes where during an evacuation, who will need extra help, etc. and then all the CDR’s send their plans to the zone director (with 4-5 CDR’s comprising a zone). Then the zone leader compiles all the information for his zone into the emergency plan and feeds it up to the municipality. In my zone for example, I have 50 vulnerable houses in my zone.

Now here this March, in Cienfuegos, we are three quarters of the way through this process. We have done the census, and the plan is currently at the provincial level. We then take it to Havana. All of the organizations and ministries do the same thing. Public Health has to re-do its plan if they have new clinics or consulting rooms. By May, all of the organizations and ministries have completed the same task in order to be ready for the official beginning of hurricane season in Cuba.”

The national simulation exercise: The Metereo

The community risk mapping and the emergency plan updates are effective popular educational tools for training the grassroots in the pragmatics of disaster preparedness planning. Every year, these lessons are further reinforced by the annual simulation exercise called the “metereo”. Once a year, at the end of May, before hurricane season starts, Cubans participate in their respective ministries, schools, workplaces, hospitals etc in a two-day training exercise in risk reduction for hurricanes. The first day consists of simulation exercises to rehearse disaster scenarios. The second day is spent in preparation activities, cutting down branches, cleaning culverts, checking dams or reservoirs for weak spots and identifying places to evacuate animals etc.

Disaster simulation on a national level

*“In the metereo we do an enactment of a hurricane occurring, keeping in mind that we are awaiting a serious hurricane. We give people simulation exercise to do... for example, with the electric company here in Cienfuegos, the head of the Civil Defence will give the director a situation: “So many lines are down, so many generators are affected and here is your main problem,...” And he will be asked, “How will you confront this situation?” He has to respond based on his emergency plan outline. On the first day, everyone engages in these exercises, responding to hypothetical situations. On the second day, they carry out all the physical preparation measure in the community”.*¹³

¹³ Jose Castro, Jose Castro, National Civil Defence Cienfuegos province, personal interview, March 2003

The simulation exercises actively involve most of the population in concrete preparation for hurricanes.

Disaster response

Cuba's disaster response is organized into 4 phases. These have been clearly assimilated by the entire population, including school children. The government packages messages and information relevant to each phase in clear, consistent and easily recognized formats. For each phase, there are consistent instructions about what measures to take and what to expect. These are taught in schools and workplaces, explained in Red Cross training activities and reinforced through the media. In reviewing this procedure, Oxfam America conducted random interviews in the streets of four cities, Havana, Pinar del Rio, Nueva Gerona, and Cienfuegos with both adults and children, to ask them about the emergency response phases. Every single person interviewed could explain the emergency response phases for hurricanes.

1. Phase 1, Emergency; 72 hours before the hurricane

When it seems likely that a hurricane will hit in 72 hours, the media begins intensive coverage to keep the population informed. The Civil Defence structure is put on alert, the heads of provincial and municipal assemblies assume their roles as local heads of the Civil Defence, organize their command centers and activate their structures, review emergency plans, and assign equipment and transport where it will be needed. At the community level, family doctors, school directors and heads of workplaces do the same, making sure their lists of and plans for vulnerable people are current. The Cuban Ham Radio Association members, incorporated into the National Civil Defence structure, prepare in case the electricity fails during this or any of the next phases.

2. Phase 2 Alert; 48 hours before the hurricane

In the alert phase, everyone goes into full mobilization. The National Civil Defence centers in each province, municipality and zone become the locus of all coordination and information. All students are sent home from school, particularly from boarding schools. When the High Command of the National Civil Defence orders evacuation, all evacuation of high risk populations begins according to plan. Volunteers harvest crops and move animals to higher grounds.

- **Lifeline structures;** Cuba's two key lifeline structures are mobilized through local leadership and community organization; timely mass evacuation and local shelters.¹⁴
- **Evacuation:** Cuba's evacuation plan offers three options to minimize the problems of mass shelters and conserve resources. First, if a family is not in a flood zone and their house is certified as safe, they can remain if they wish, and take in neighbors from homes certified as vulnerable to the storm. Second, if a person's house has a roof of tile, fiber-cement or thatch, they will be assigned to move in temporarily to another family who has a house certified as safe, usually a friend or a relative. Third, if places in nearby houses have already been assigned, the family is assigned to a group shelter and transport is provided. Since mass evacuation is Cuba's first line of defence, all means of transport from cars to trucks to carts are mobilized by the local civil defence as needed and at the disposition of the evacuation.

¹⁴ Ben Wisner (2001)

- **Shelters:** Community shelters are set up in schools or community buildings at the beginning of the alarm stage and they receive stocks of water, medicines and supplies. The different heads of government ministries cooperate closely. Each shelter is staffed by a director, a deputy, a doctor, a nurse, a psychologist, a veterinarian for pets, police and a representative of the Red Cross.

Oxfam America’s research has shown that the lifeline structures of evacuation and shelter in Cuba work because people adhere to established procedures. People are educated about the importance of following these procedures to save lives, feel safe, know where to go and trust they will be provided for. Without such cooperation, people may not full advantage of lifeline structures and lives are lost. The successful implementation of Cuba’s lifeline structure demonstrates the importance of building confidence in disaster response procedures and systems.

3. Phase 3, Alarm

The alarm lasts as long as the hurricane persists. Everyone must stay indoors while the media continues to broadcast information. All National Civil Defence workers must stay at their posts and remain in communication with the central structure to act as needed.

The box below provides some “snapshots” of how the three phases work in reality.

Implementing the four phases of emergency following Hurricanes Lili and Isidore, 2002

In October 2002, Hurricanes Lili and Isidore hit within two weeks of each other. Community members in the Jose Marti cooperative on the Isla de la Juventud explained what they did in the alert phase. All the secondary students were sent home from their boarding schools and those who lived in areas of risk were evacuated. Everyone had already been designated a place of refuge in the emergency plan, long before the storm hit. To maximize resources, as many people as feasible were assigned to a nearby neighbor or family member’s house as long as it was solidly built to withstand hurricanes and had no danger of flooding. The rest were transported to an evacuation center, usually a school.

The cooperative directorate explained how they successfully evacuated 1,300 animals to higher ground, losing only a total of two. They evacuated their cooperative members, driving across flooding creeks to rescue people stranded by rapidly rising waters.

In the principal city of Nueva Gerona, for purposes of this interview, the head of the municipal government for the island gathered the local representatives of the Ministries of Education, Health, Hydraulic Resources and the local heads of mass organizations to explain their roles in disaster preparedness and response. For example, the Ministry of Health manages health in the shelters and provides medical care and supplies, the police provide security and the municipal bakeries provide food.¹⁵

4. Phase 4, Recovery

Once the storm has left the national territory, local and provincial government leaders in their role as civil defence directors begin to mobilize teams for clean up, repair of urgent structural damage, provision of safe drinking water and repair of electricity lines etc. The National Civil Defence needs to certify that homes are safe before people can return to them. Local

¹⁵ Interview notes taken during the Oxfam America visit to Isla de la Juventud in October 2002

authorities undertake a census to calculate economic losses, housing damage and agricultural losses. This phase winds down when services are restored and areas are cleaned up. The High Command of the National Civil Defence proposes to the President that the emergency system be deactivated. When the President approves the deactivation of the emergency system, the country returns to normal decision-making and governance procedures. Where possible, the provincial, municipal and local authorities focus on their administrative duties, incorporating the longer-term recovery measures into ongoing development structures.

Conclusion

The Cuban achievements in risk reduction emanate from a multi-dimensional process. The country's risk reduction model offers lessons to governments, ministries, municipalities, and grassroots organizations. On the whole, it has been extremely effective as illustrated by the dramatic low numbers in hurricane related deaths. In the aftermath of Hurricane Katrina's devastation on the Gulf Coast, the Cuban experience provokes us to reassess the often assumed advantage of wealthy countries with high tech infrastructure in protecting lives during emergencies. The Cuban experience demonstrates that risk management systems should consider supporting the intangibles of relationship, training and education. Good governance for risk reduction as evidenced by Cuba begins with an approach, a mindset. With that mindset in place, it becomes possible to maximize resources, create cooperatives structures, use grass roots level resources and create a "culture of safety". This presents out real possibilities and hope for other countries, rich and poor alike, facing the growing dangers of natural hazards.

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