Prefering for the next Katrina

Ten years ago, Katrina, a category 5 hurricane at peak strength, slammed into New Orleans. Its associated storm surge breached the extensive levee system that had protected the city. Nearly 2000 residents died, and damages exceeded $100 billion. The storm remains the costliest natural disaster in U.S. history, and the resulting economic, social, and environmental turmoil led to the largest mass migration since the U.S. Civil War. A distinguished panel* of scientists and engineers who had been on the scene of Katrina was convened on the eve of the 10th anniversary of this event to address the question: Are American cities better prepared for the next major hurricane?

The good news is that cities are better prepared, according to the panelists. Today, it is routine for agencies such as the U.S. Army Corps of Engineers to apply a systems-based approach for managing disaster: a strategy that recognizes that communication is just as important as a seawall, and that applies appropriate risk management to system operation. The growth in the use of social media to broadcast timely and authoritative information to the public and to receive situational reports from the public has been phenomenal. During the Tulsa flooding this past June, public engagement with the Army Corps of Engineers’ social media outlet grew from 5 million to 65 million hits.

Nevertheless, there is much more that can be done to prepare cities for the inevitable. Communities need to be thinking beyond seawalls for future flood and hurricane protection. Alternative routes to resilience include restoring salt marshes and oyster flats or installing more modular structures that “stage” as a disaster unfolds.

The human dimension of hurricanes also needs attention, such as collecting behavioral data on the factors that influence decisions on whether to evacuate or stay put, rebuild or relocate, etc. Many residents refused to evacuate in the face of Katrina because shelters would not accept pets, for example. A sensible recommendation (from the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina) was to turn the 9th Ward of New Orleans into green space, because it is below sea level. However, residents insisted on returning to that region—their home. Indeed, community members want to decide where they will live and how much they are willing to invest to live there. The challenge is to provide the science and engineering information in a transparent way, along with concepts of resilience and risk, so that people are clearly aware of all the relevant factors when they make up their minds about where they will live.

The hurricane panelists frequently used the earthquake community as a role model to emulate. Annual events such as the “Great ShakeOut” convince people worldwide that they are vulnerable to seismic events, prepare them mentally to take action, and show them how to survive. Another promotion has been for residents in earthquake country to keep prepackaged earthquake survival kits handy. Both ideas are readily transferable to the many at risk from hurricanes. U.S. earthquake resilience benefitted greatly from international collaboration with Japan, Chile, China, and other partners, who shared their knowledge of how engineered structures respond to various ground shaking, and their successes with early warning systems during rare seismic events. By comparison, hurricane resilience research has lacked an international perspective, despite the large number of nations that experience typhoons and similar severe coastal storms.

Like all other natural disasters, it is not a question of if, but when. We know which U.S. cities are the most at risk. Everyone must work together to make them the most prepared.

– Marcia McNutt

*The panel consisted of Gregory Baecher, University of Maryland; Thomas Bostick, U.S. Army Corps of Engineers; Wayne Clough, former secretary of the Smithsonian Institution; Reginaid DesRoches, Georgia Institute of Technology; Alton Romig, Jr., National Academy of Engineering; and Lauren Sauer, Johns Hopkins School of Medicine.

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