



## **THE QUEST FOR SHELTER: NATURAL DISASTER AND TERRORISM**

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Terrorism and natural disasters share some common characteristics. They are often unexpected, fatal and disruptive. Societies have, therefore, tried to secure themselves through both prevention and response. What we call “disasters” are usually matched by failures on both ends. This essay focuses on one element of response, the quest for shelter following disaster, that spells the difference between recovery and a prolonged crisis (whether caused by terrorists or nature).

The way we respond to the quest for shelter in the aftermath of a disaster goes well beyond the immediate consequences. For example, the first few months of 2010, alone, saw two earthquakes devastate the western hemisphere, leaving hundreds of thousands dead and millions homeless in both Haiti and Chile combined. And while these disasters did not occur upon our shores, the United States government nevertheless dispatched rescue workers and financial aid to both countries with total support to date reaching more than \$700 million.<sup>1</sup> Much of this funding is devoted to repair and recovery, including the provision of temporary shelter.

Providing such aid internationally gives the United States government an opportunity to strengthen its standing in the worldwide court of public opinion. Because aid to a disaster-stricken country is generally provided by National Guardsmen called into service by their Governor or President, such assistance is almost always met with a positive reaction towards the U.S. Military. This reaction—both within the country being given aid and internationally—is a much needed by-product of the U.S. disaster-assistance program. As such, the United States’ international disaster-assistance program has significant national security implications since the provision of aid can directly contribute to reduced hostilities towards the United States generally and the U.S. Military in particular.

### **LESSONS LEARNED**

America’s recent recovery efforts have been shaped by lessons learned after the flawed response and recovery efforts to Hurricanes Katrina and Rita in 2005. Those flawed efforts prompted the review of the United States’ disaster assistance programs, culminating in the passage of the Post Katrina Emergency Management Reform Act. This act, among other things, expanded the role of the Federal Emergency Management Agency (FEMA), mandated an increased level of coordination with state and local emergency management officials and established—for the first time —national strategies for improving its disaster assistance programs. Out of those strategies, one of the most important changes has been recognizing the issues surrounding FEMA’s current temporary housing program.

To date, FEMA has been using travel trailers as temporary housing for those displaced by a disaster. The problems with these trailers, however, are numerous. For one, they are not sturdy enough, being neither hurricane nor earthquake proof. This issue is extremely dangerous, especially considering that those temporarily residing in these trailers may generally stay in them for up to 18 months, during which time the possibilities of facing additional hurricane systems or earthquake aftershocks is almost a certainty. Reports also indicate that many of these trailers have been heavily contaminated with toxic formaldehyde fumes, prompting costly Centers for Disease Control testing and reviews, as well as further relocation costs for those found living in contaminated trailers.<sup>2</sup> All told, some estimates claim that the use of trailers as temporary housing have cost U.S taxpayers many billions of dollars to purchase and

<sup>1</sup> USAID. “Fact Sheet #42: Haiti-Earthquake,” March 4, 2010; and USAID. “Fact Sheet #1: Chile- Earthquake,” March 1, 2010

<sup>2</sup> Federal Emergency Management Agency. “FEMA Plan of Action on Formaldehyde Findings to be Implemented Immediately,” Press Release, February 14, 2008.

maintain.

According to the Government Accounting Office, these trailers may cost as little as \$11,000 apiece, but installing and maintaining them generally requires \$30,000 or more. In sum, their total per unit cost is greater than \$40,000.<sup>3</sup> Figures for the response to Hurricanes Katrina and Rita alone indicate that FEMA spent roughly \$2.75 billion to buy 145,000 new trailers for the Gulf Region, paying on average about \$19,000 per trailer after a bulk-rate discount.<sup>4</sup> Add to that the estimated \$30,000 per unit for installation and maintenance, and taxpayers are looking at a bill for more than \$7.1 billion just for temporary housing in one region, for one year.

As a result, beginning in 2006, Congress began looking into alternatives to using trailers for temporary housing during emergencies. In February 2008, FEMA announced that it would no longer utilize these trailers to temporarily house the victims of future disasters. In fact, one of the programs authorized by Congress is a \$400 million Alternative Housing Pilot Program that seeks to identify, develop and evaluate alternatives to trailers that are more cost-effective, eco-friendly and, above all, more safe and secure. Moreover, as part of the Post-Katrina Emergency Management Reform Act's implementation, FEMA has developed the Joint Housing Solutions Group (JHSG) initiative to create a systematic process to evaluate and rate various innovative alternatives, and recommend improvements to disaster housing operations.<sup>5</sup>

### TRAILER ALTERNATIVES: THE SHIPPING CONTAINER

The JHSG is currently looking at many options, including the latest in factory-built contemporary housing, modular homes based on a universal design, housing built from recyclable materials and innovative work by universities all across the country. To evaluate these potential alternatives, the JHSG has developed a comprehensive Housing Assessment Tool to help FEMA determine whether any of the proposed options are suitable replacements for the trailers. Some options explored by the JHSG include modular folding houses that could be transitioned into permanent housing, a steel modular design already in use in some areas and, most interestingly, housing units that are basically converted shipping containers.<sup>6</sup>

Why shipping containers? These battered and rusted steel boxes, left empty and unused, have been littering America's ports for years. As a nation of importers, the United States receives millions of shipping containers each year. However, because it is so expensive to ship them back across the ocean empty, up to half of them never leave the ports. Some estimates maintain that, at any given time, there are approximately 700,000 empty and unused shipping containers sitting in stacks at ports across the country. Because of this abundance, unused containers can be purchased at costs between \$1,500 and \$4,500 depending upon condition. They require only about 100 hours of labor to prepare them for further construction.<sup>7</sup> At the highest price, and even when estimating labor costs above the national average—say \$30 an hour—preparing these containers for conversion into something that can be used for temporary housing would only cost about \$7,500 a piece. Making these containers completely habitable, however, will require them to be retrofitted with insulation from the heat conducted by the steel box, framing and other materials. Other estimates, therefore, place the final per unit cost somewhere between \$40 and \$45 per square foot. This equates to about \$12,000 to \$14,000 per unit when all is said and done (without a bulk-rate discount). By comparison, if this option had been available to FEMA during the Hurricane Katrina recovery effort, the government could have saved at least \$725 million on the purchase of temporary housing alone.

### REAL SHELTER

Cost, however, is not the only reason why retrofitted shipping containers have become such an excellent alternative to trailers. Because these containers were built to withstand the dynamic, moving environment aboard ships, their unibody, steel construction exceeds any structural code in the United States—or around the world. Thus, when placed in a stable environment upon a foundation, temporary housing manufactured from shipping containers are hurricane, tornado and earthquake proof. In fact, according to Doug Hecker, an Associate Professor at Clemson University, these containers have already been used in other countries as emergency shelters after earthquakes.<sup>8</sup> Recycling the

<sup>3</sup> Eaton, Leslie. "Agency is under pressure to develop disaster housing," The New York Times. April 13, 2008.

<sup>4</sup> Associated Press. "FEMA plans to sell hurricane trailers," Los Angeles Times, March 8, 2007.

<sup>5</sup> Federal Emergency Management Agency. "Disaster Assistance Directorate: Fact Sheet."

[http://www.fema.gov/media/fact\\_sheets/dad.shtm](http://www.fema.gov/media/fact_sheets/dad.shtm). Accessed on March 8, 2010.

<sup>6</sup> Federal Emergency Management Agency. "FEMA Evaluating Non-Traditional Alternatives to Trailers/Mobile Homes for Future Disaster Housing." Press Release, February 29, 2008.

<sup>7</sup> Heussner, Ki Mae. "Home sweet shipping container?" ABC News. November 7, 2008.

<sup>8</sup> Clemson University. "Haiti Earthquake: Converting shipping containers into emergency housing." Science Daily, January 17, 2010.

containers into something useful will also help cut down their environmental impact. Noting the current trend towards green, eco friendly business practices, Bruce Russell—the managing director for a leading company working in container construction—explains that converting the containers into construction blocks consumes far less energy than the process of totally melting down the whole container.<sup>9</sup>

Moreover, because these containers were designed to be sent en masse upon a large cargo ship, they are already made to be easily stacked and stored. In fact, they are essentially 8 by 40 foot steel Legos®. This makes them really easy to transport for use as temporary housing to any disaster location nationwide. And since they are the standard size for shipping already, they can be sent anywhere around the world at no extra cost or effort. Imagine if the U.S. government already had thousands of these retrofitted containers in storage. They could have been on their way to Haiti and Chile as soon as the earthquakes hit those countries, and set up in enough time to protect those displaced from their homes from the effects of the aftershocks. Sadly, these aftershocks caused even more damage and fatalities from insufficient protection. Additionally, the containers' ease of use also makes them practical as temporary housing in the event of a terrorist attack that displaces residents from their homes for long periods of time. Even when such attacks occur abroad, the U.S. government could provide these retrofitted storage containers quite easily as a means of disaster-assistance to the attacked populations.

### **WHY NOT?**

Why, then, has this idea not been adopted by FEMA, or at least more seriously considered? Since the Post-Katrina Emergency Management Reform Act began, numerous hearings have been held by various congressional oversight committees to assess the current state of the U.S. disaster-assistance program. However, these hearings offered no specific objections to any of the alternatives to FEMA trailers. Furthermore, the JHSG has yet to release its report in which the modified containers and other alternatives were rated. In fact, only when analyzing their use as building blocks for permanent housing, can any specific objections be found. Even though the modified steel containers are much stronger than other, more popular forms of construction, local planning and zoning commissions have been extremely reluctant to approve anything so new. Some municipalities have even gone so far as to disallow the use of any shipping containers as housing.<sup>10</sup>

Are these municipalities' simply being cautious? Or are there other reasons? FEMA's lack of haste, however, in deciding upon any viable alternative to its trailers is alarming. With another hurricane season on the horizon—one in which predictions indicate at least seven hurricanes, five of them major (Category 3 or stronger) for the Atlantic and Gulf Coasts—FEMA can ill afford to be unprepared again. Using these containers for its temporary housing program is the most viable, cost-efficient, and secure alternative to trailers. The Obama Administration, no less than its predecessor, cannot afford to be asleep at the switch when disaster—or terrorism—provokes a desperate quest for shelter.

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<sup>9</sup> Heussner, Ki Mae. "Home sweet shipping container?" ABC News. November 7, 2008.

<sup>10</sup> Lloyd, Carol. "Innovative architects turn used shipping containers into homes." San Francisco Chronicle, June 16, 2006.