



Decision-Making Approach for Catastrophic Scenario Selection in Disaster Recovery Planning

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ABSTRACT

Generally, throughout history, societies have failed to prepare beforehand for potential man made and natural catastrophic events. However, as societies evolve, their view on what can and should be done when affected by these types of events has shifted from a passive acknowledgement that catastrophes will happen, into a proactive stance on planning and organizing resources to mitigate their effects. This paper presents a decision-making based approach for catastrophic scenario selection to guide the process of disaster recovery planning development. The approach proposed can be used to identify the most damaging scenarios in terms of probability of outcome occurrence. Once these scenarios have been identified, the proposed approach produces a set of indices that allow for the computation of similarity, dissimilarity, coverage and exposure for a potential scenario with respect to all possible scenarios. Finally, based on these indices, scenarios are ranked and then selected for disaster recovery plan development. [Article copies are available for purchase from InfoSci-on-Demand.com]

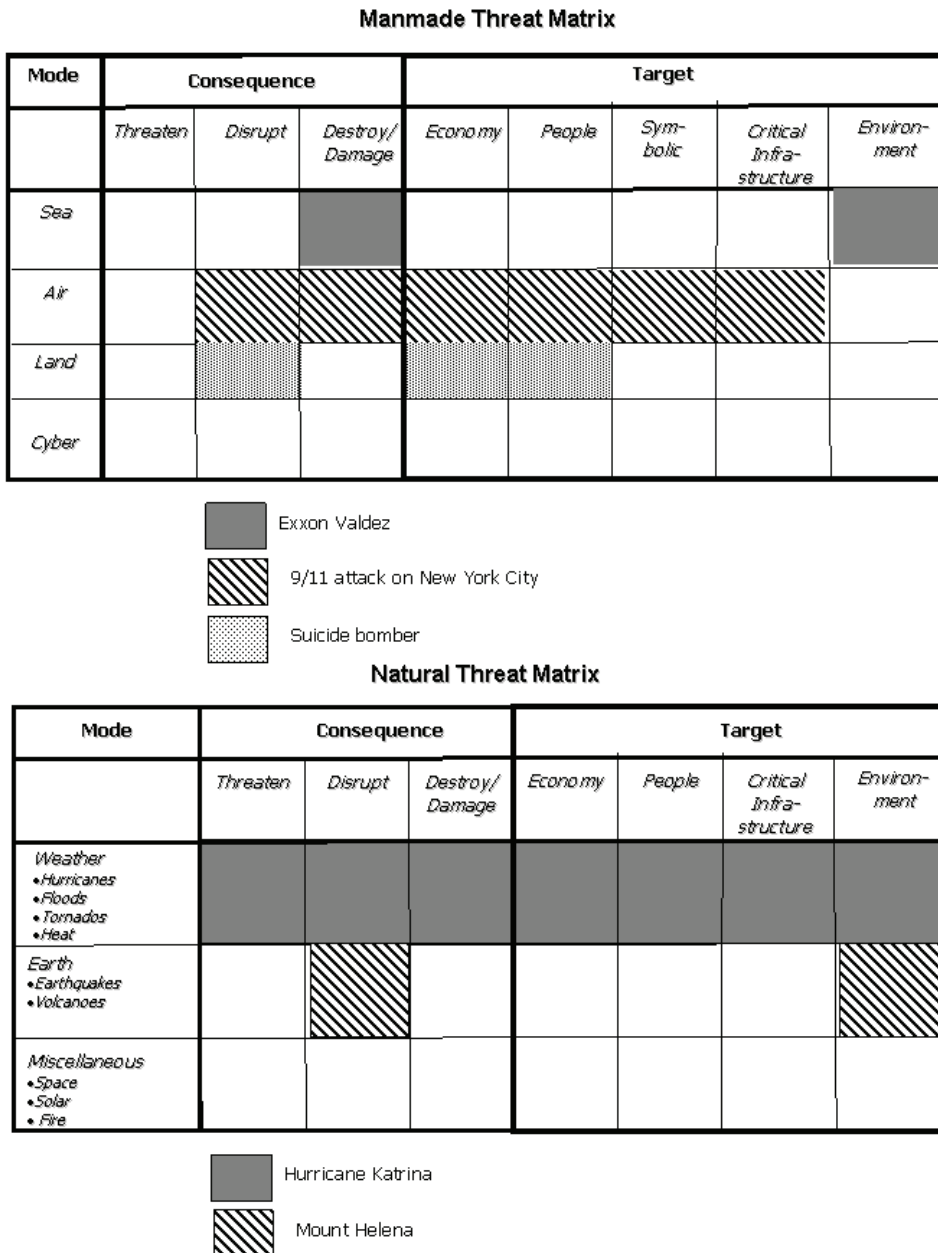
Keywords: *Decision-Making; Disaster Recovery Planning; Scenario Selection*

INTRODUCTION

Catastrophic disasters, in terms of the impact they have on humanity, have always been present. The eruption of the Vesuvius volcano the morning of August 24th 79, devastated the city of Pompeii (Wallace-Hadrill (1994)). Thirteen years of drought in the years before 1454 led to one of the greatest famine catastrophes of

Aztec history known as the “One Rabbit famine” (Therrell et al (2004)). Early in the morning of August 29th 2005, a Category-4 hurricane named Katrina hit the states of Louisiana and Mississippi producing estimated damages of \$96B (The White House (2006)). Similarly, there have been many widely documented man-triggered catastrophes that generated devastating consequences. A few examples of these are oil

Figure 1. Man made and natural catastrophic events threat matrix



spills (i.e., Exxon-Valdez in 1989, Mega Borg in 1990, and the Prestige in 2002) and nuclear disasters (i.e., Windscale in 1957, Three Mile Island in 1979, and Chernobyl in 1986).

As shown in Figure 1, there is a wide spectrum of events, consequences, and targets that can be classified as either man made or natural catastrophic events. History has shown, the soci-

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