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PLANNING FOR COASTAL COMMUNITY RESILIENCY:

A PARTNERSHIP APPROACH

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ABSTRACT

Disaster planning and recovery programs and policies are becoming more important as the number and frequency of disasters and their widespread damage throughout the world increases. Governments alone is no longer the answer. The entire community needs to be involved. There are local "assets" that a community has available to assist in addressing natural and human-caused disasters. Asset-Based Community Development (ABCD) is an approach that involves both public and private sectors, with strong emphasis on using local resources. This whole community concept includes collaboration among agencies that provide services to disaster victims, educating residents about potential hazards and how to prepare for them, and developing a coordinated set of policies that can be communicated to the public. Engaging in sound community development practices that involves the whole community, including those who may be affected by the disaster (as well as youth and the elderly) is paramount to successful outcomes in post-disaster recovery. The southeastern United States had dealt with many natural disasters, which include hurricanes, tropical storms, coastal floods, tornadoes, and wild fires, as well as human-caused disasters such as industrial accidents, and major oil spills. Educational programs, materials and best practices and principles have been developed for individuals and communities to become more resilient to these disasters through the pre-planning and post-disaster recovery phases.

INTRODUCTION AND BACKGROUND

Individuals and communities have been impacted and have had to cope with natural and human-caused disasters since the beginning of civilization. In some instances, natural events obliterated entire communities. For example, the eruption of Mt. Vesuvius completely destroyed and buried the city of Pompeii with volcanic ash in AD 79. Human-caused events have also impacted entire communities and regions. The Chernobyl nuclear disaster of 1986 resulted in the nearby community of Prypiat evacuated and sent a radioactive cloud across Eastern Europe that had an impact on local communities.

Disaster planning and recovery programs and policies will become more important as these events, which generate widespread economic damage, are expected to increase in number and magnitude. Worldwide, the number of disasters has almost quadrupled since 1980 (Wamsler, 2014). In 2004, the Indian Ocean tsunami, created from a massive earthquake on the Indian Ocean floor off Indonesia, killed several hundred thousand people along the coastlines of eleven countries. In 2005, in the United States Hurricane Katrina devastated the city of New Orleans and many communities located along the Gulf of Mexico. In 2010, a violent earthquake struck Haiti near the capital city of Port-au-Prince that killed more than one hundred thousand people (Green and Haines, 2012). In 2011, the Great East Japanese Earthquake off the coast of Japan, the most powerful earthquake ever recorded to hit Japan, created powerful tsunami waves that reached heights of more than 40 meters in some areas, destroying many coastal communities. It also led to a nuclear meltdown at the Fukushima Daiichi Nuclear facility. Individuals living in communities around this facility have been permanently relocated due to the high levels of radiation that remain near the site (Yamashita, 2012).

Communities can be torn apart by these disasters or they can be solidified by the experience of these disasters. Planning plays a major role on how resilient these communities are to "bounce back" from these events.

Individuals no longer can handle these disasters alone. Neither can government, which took on the responsibility in the planning, response and recovery of disasters in the past. Today, in the United States, there is a movement to involve the "whole community" in the planning, response and recovery to disaster events, which will lead to a more resiliency

community. This paper will provide a brief background on natural and human-caused disasters, the importance of pre and post disaster planning, the concept of resiliency and the concept of whole community planning. It will also include some examples of both individual and community planning that can lead them to be more resilient to future disasters.

<h2 style="text-align:center">PLANNING FOR DISASTERS</h2>

In order to plan for a disaster one first needs to have concrete definitions on disaster, disaster risk, vulnerable condition and the concept of resiliency. Planning for a natural or human-caused event is critical for both individuals and families. Pre-disaster plans may lessen both loss of life and property damage. Education can also play a critical role in helping individuals, families and communities become better prepared and more resilient.

What is a Disaster?

In simple terms, a disaster is defined as an event that has serious disruption to a community that exceeds the ability of the community to cope with the aftermath on its own. They may be natural or human-caused events. Natural-caused events could be earthquakes, tsunamis, hurricanes or floods. Examples of human-caused events include the industrial accident in Bhopal, India; the Chernobyl Nuclear accident in Russia, or the Deep Horizon Oil spill In the United States. However, these events do not cause "disasters" on their own, but only when combined with "vulnerable conditions" such as people, human systems or infrastructure that are susceptible to the damaging effects of these events. If individuals and communities plan in advance, they have a much better chance in reducing the risk and vulnerability to these disasters.

What is Disaster Risk?

Disaster risk is the probability that a serious disruption (disaster) will occur. It is determined by the interaction of the hazard (H) and the vulnerable condition (V). Disaster risk can be shown by the simple equation of $R = H + V$, with R standing for Risk, H for Hazard, and V for vulnerable condition. We can reduce the risk (R) if we lessen the degree that we are exposed to the hazard (H). We can also reduce the vulnerability (V), that is lessen the degree of loss (that can range from 0 to 100%) from the potentially damaging event through planning (Wamsler, 2014).

Approaches to reduce disaster risk

There are various approaches that can be taken to reduce risk. First, one can avoid the hazard and impact by moving away from the potential impact site. Second, one can modify the impact on the community by relocating buildings and infrastructure to lesser impact areas. Third, one can lessen the impact and protect the community by modifying the infrastructure by building levees, tsunami walls, or floodways. Fourth, one can offset the impact following the disaster through compensation with monetary relief or reconstruction to communities (Randolph, 2004).

Planning for Resiliency

Through planning, the goal is that a community may become more resilient to these disasters. Planning can help the community prepare for, respond to, and rapidly recover from these natural or human caused disasters with minimum downtown for them, following the event; this means they have the ability to "bounce back quicker." Some argue that resilience as the antithesis of risk. The more a community has planned for its resilience, the less risky (or vulnerable) it is to the hazards (Wamsler, 2014, p. 31).

Unfortunately, individuals and communities may not do an adequate job in planning for disasters. Individuals give a variety of reasons why they do not plan for these disasters. Individuals living in the southeastern United States have provided the following reasons for not planning for natural hazards. 1) I survived past natural disasters, so I am sufficiently prepared. 2) If a hazard occurs, it won't be that bad. 3) A natural hazard cannot happen to me. 4) I don't live near the coast so I am safe. 5) If a natural hazard occurs, government will come to my rescue. 6) Even if there is a hazard, there is nothing I can do. 7) Strengthening my house is too expensive and not worth the effort (Berns-Cadle, 2013).

The Consequences of Not Planning or Being Prepared

Researchers who study human behavior and disaster events discovered that people go through several phases in reacting to a stressful situation. These phases include denial, deliberation and decision-making, what I refer to as the "3Ds." When faced with a major potential catastrophic event, many deny that the event is occurring; they then go through a deliberation stage before making a decision and taking action. Unfortunately, spending too much time in the denial or deliberation stage can have dire consequences. In the 911 terrorist attacks on the World Trade Center in

New York City and with Hurricane Katrina in the United States, many individuals lost their lives by spending too much time in the denial or deliberative stage, and not taking decisive action. Also, many individuals may be over-confident in their ability to handle these disasters. Researchers have discovered there are both psychological and physiological changes in your body when stressed by the unexpected; people may freeze or become irrational in their immediate response to these events. Planning and preparation may help individuals through the denial and deliberation phases. There are reasons why there is extensive training among police and fire fighters who must deal with stressful situations on a daily basis. Their continual training moves them quickly through the denial and deliberative stages to take decisive action. Through planning, both individuals and communities can also be more prepared and resilient following a disaster (Ripley, 2009).

Individual and Family Disaster Planning in the United State. There are a number of recommended practices for individuals and families in planning for disasters. First, assess the disaster risk in your home, neighborhood and community. Second, have knowledge of local emergency management resources, evacuation routes, emergency shelters, emergency response resources and family, work and school disaster plans. Third, develop a family disaster plan on what family members will do in these events. Fourth, develop a family reunification plan. Designate emergency rendezvous points following a disaster, and have an out-of-town family contact number. Fifth, make sure you plan for any special needs children and the elderly. Sixth, have an emergency cache that includes medicines, water, and food that provides for your needs for a minimum of 3-7 days. Do not forget to also have first aid kits, basic tools, non-powered phone and radio, and cash. Most importantly, make sure you discuss your plan with family members periodically, and follow your plan when a disaster occurs. These practices will help individuals to avoid the pitfalls of the "3 Ds." (Berns-Cadle, 2013).

Educational Resources and Approaches
Governments, universities, non-profit organizations and community groups have produced a vast variety of resources that provide technical assistance and information to both individuals and communities. These include informational brochures, planning checklists, posters, books, websites, social media, radio and television announcements, community training events, exhibits at local businesses and community fairs. The following website is an example of some of these type of resources that have been developed by the University of Florida.
http://solutionsforyourlife.ufl.edu/disaster_prep/

THE WHOLE COMMUNITY APPROACH

The premise behind the "whole community approach" is a relatively simple one. If the whole community is going to be impacted by these natural or human-caused events, then everyone in the community should be involved in the planning from preparation to response and recovery from these events.

The Need for Whole Community Planning
Local governments do not, by themselves, have the resources or expertise to carry out all the phases of emergency management in addressing natural or human-caused disasters.
Neither can individuals or the private sector do it on their own. Thus, individuals, government, business and industry cannot be independent of one another. Rather, all resources in a community should be integrated and leveraged to better prepare the community for disasters and making them more resilient following the event. Researchers recognize that the community is composed of various resources or "assets" that can be used in planning for a resilient community. Instead of relying solely on outside sources of expertise, the community should utilize local resources and expertise. This approach is often referred to as asset-based community development or ABCD (Green and Haines, 2012). One important aspect of the ABCD approach is that all members of the community should be involved in the planning process. This ABCD approach to emergency management is increasingly being used in the United Kingdom, the Netherlands and elsewhere. It is now gaining a foothold in the United States (CARRI, 2013).

Hurricane Katrina and Rita: Catalyst for Whole Community Concept in the United States
In late August 2005, the Gulf of Mexico was devastated by both Hurricane Katrina and Hurricane Rita. Katrina was one of the five deadliest hurricanes that hit the United Stated coastline, and the costliest natural disaster in United States history. More than 1,800 individuals died in the hurricane and subsequent floods. The majority of deaths occurred in the New Orleans, Louisiana area, which experienced massive flooding following the failure of the levee system that had been constructed to protect the city. More than 80% of the city and many of the local parishes became

flooded, with the floodwaters lingering for weeks. Many residents lost their homes and were displaced, with many fleeing to the surrounding areas, as well as Houston, Texas and Atlanta, Georgia.

The total property damage from Katrina was estimated at more than $108 billion dollars. $100 billion with over $34 billion in insured losses (Waple, 2005). The majority of the property damage did not occur in the New Orleans area, but in the surrounding coastal areas in Mississippi and Alabama States. Over 90% of the coastal communities were flooded in a matter of hours. Houses and cars were pushed inland, boats and casinos were torn lose and rammed into buildings, and the high storm surge brought these flood waters 6–12 miles (10–19 km) inland from the coastal beach. A number of coastal highways and major bridges were also washed away.

Three weeks later, on September 23, Hurricane Rita struck the Gulf of Mexico coast. Rita became super-charged when it entered the Gulf of Mexico and attained a Category 5 hurricane intensity, making it the strongest hurricane every recorded in the Gulf of Mexico. Fortunately it did dissipate to become a Category 3 by the time it made landfall and damage was not as significant as expected. However, a storm surge of more than 17 feet caused great property damage in southern Louisiana, and Texas experienced a major turmoil as an estimated 2.5–3.5 million people evacuated the coast prior to the event, some fearing the worst on the heels of Katrina.

The 2005 hurricane season (June 1–November 30) was a record-breaking one for the United States. It included three of the six most intense Atlantic hurricanes ever (#1 Wilma, #4 Rita, #6 Katrina). As a result of these major hurricane events and the social chaos that followed, many came to realize that the public sector, namely federal, state and local governments alone could not effectively prepare for these disasters. These major disasters also raised the visibility of the nation's most disadvantaged and vulnerable populations during these events. Following several high profile studies, a "whole community approach" in pre-disaster planning and post-disaster recovery efforts was undertaken. Experts suggest that community disaster resilience would be best achieved through public-private collaborations (National Academy of Science, 2011).

The Federal Emergency Management Agency (FEMA) has taken the whole community approach into their planning efforts. They have rewritten their planning guide, Comprehensive Preparedness Guide 101 (CPG) that now emphasizes community-based planning in which the whole community is engaged. This new planning document, known as CPG 2.0 to help integrate and synchronize efforts across all levels of government, and to include all segments of the local community. It also ensured that local plans were developed through risk analysis, identified local assumptions and resource demands, and prioritized activities to support the transition from development to execution for any threat or disaster (FEMA, 2006).

Examples of Whole Community Planning Tools and Approaches

Various tools and approaches have been developed for communities that could better prepare them for future disasters. The Southern Rural Development Center (SRDC) developed "Ready Community," a program where all members of the community can be engaged in pre-disaster planning efforts. This program was developed as a companion to FEMA's CPG 101 2.0 program. This program is targeted to rural communities, as they have special challenges. The first challenge is that rural communities seldom have dedicated staff or expertise to do comprehensive planning. In addition, those who are responsible for emergency planning also have many other community responsibilities. The second challenge is that these rural communities are often the last to receive aid following a disaster, often due to their remoteness. As a result, communications with aid agencies are also more difficult. Finally, help traditionally go to where the greatest number of people are impacted. Facilitated by a neutral coach, this process involves broad civic participation, creates links to local assets and resources in the community and supplies current data to help guide the planning process. The Ready Community Approach involves six essential steps that each community would take to develop their individual plan. These included 1: Form a collaborative planning team, 2: Understand and analyze the local situation, 3: Determine community goals and actions, 4: Develop a community plan, 5: Prepare, review and have the plan approved by the local government, and 6: Implement, maintain and periodically evaluate the plan. Currently the Ready Community program is being piloted in the states of Montana, Texas, Kentucky, Mississippi, Missouri, Washington, North Dakota, Florida (SRDC, 2012).

The Gulf of Mexico Alliance Coastal Community Resiliency Program Implementation Team (GOMA CCR PIT) has developed the Coastal Resilience Index (CRI), an assessment tool that local citizens can use to survey how well prepared (or resilient) their community is for future storm events. The community analyzes their critical infrastructure and facilities, transportation issues, community plans and agreements, mitigation measures, business plans, and social systems. Following a tally of points for each category, the community rates itself using the CRI on their level of preparedness and resilience as being low, medium or high. If these various categories are ranked low or medium, the community identifies areas that need improvement. In 2014, the GOMA CCR PIT provided grants to small coastal communities to address their "gaps" or deficiencies so that they could become more resilient in the future (Sempier, 2010).

Another local example is the Support Alliance for Emergency Readiness Santa Rosa (SAFER) that was developed to bring together local business, nonprofit and faith-based organizations in providing more efficient services to disaster survivors after Hurricane Ivan devastated northeastern Florida in late 2004. SAFER also serves an important service during non-disaster periods; during these times it works closely with other agencies in the region to address the needs of the poor and other vulnerable populations (Kaufman, 2012).

PUBLIC-PRIVATE COLLABORATION PRINCIPLES

The National Academy of Sciences (NAS) produced a report that identified key principles that are essential for effective collaboration between the private and public sectors, and that embraced the whole community concept (National Academy of Sciences, 2011). The NAS states that these collaborations can help leverage existing resources, knowledge, skills and energy to ensure that communities can better prepare, withstand and recover from disasters. The following are key principles for effective collaborations.

Establish Strong Collaborative Structures. First, collaborations begin with strong leadership in the community. This usually involves a core group of individuals or leadership team that lays the foundation for whole community involvement. Second, the decision-making of this process should be decentralized, to ensure that all community members have the ability to voice their opinions and have a voice in the final outcome. Third, it is important to establish a staff of coordinators who can manage the collaborative activities and the day-to-day operations. They can also be useful in procuring additional funding and resources for the effort. Finally, it is important to identify existing resources, individuals, and organizations and to integrate their efforts into this new collaborative process. Engaging these existing networks and individuals builds both trust and a sense of community purpose to the activities.

Engage the Entire Community in Collaboration. First, inclusion of all segments of the community means the young and the old, the rich and the poor, those with established religions and those with no religion, all racial groups, and those with special needs. Second, creating opportunities and incentives for vulnerable populations or those who feel disenfranchised to become involved in the process. Third, identifying potential risks and uncertainly in addressing community issues. This helps to prioritize approaches to address issues in a timely manner.

Encourage Communications Among Collaborators. First, facilitate open dialogue and communications to build trust among collaborators. Bringing a diverse set of individuals together has its challenges since the public and private sectors communicate differently, have different decision-making perspectives and may not have experience working with different stakeholders in this process. Therefore, developing approaches that bring individuals to respect the significance and diversity of the participants is needed in creating a resilient community. Second, look for innovative ways to promote coordination and flexibility among the various organizations who are involved.

Evaluate the Effectiveness of Collaboration and Recognize Success. Identify measurable outcomes and impacts that show how these collaborations are effective and sustainable. Showing successes also helps to keep individuals involved. By developing annual plans that have well-defined, measurable objectives; that demonstrate new capabilities; and that deliver returns on the investment (be it individual's time, talents or funds), the planning effort has a much better chance of becoming a more resilient community for disasters that face them.

It cannot be over-emphasized the importance of all groups in the community planning for disasters. It is important to include both the young and the elderly (Hales, 2012). Also, an often forgotten resource in the recovery phase of disasters is the arts and folk culture community. This group helps to re-establish the "sense of place" to help individuals and community come together, but they also may be a future economic tool for eco-tourism (Thompson, 2014). Finally, researchers are using social media and facilitated meetings to bring together large, diverse segments of the community together in these planning venues (Lukensmeyer, 2007).

SUMMARY

Disaster planning and recovery programs and policies are becoming more important as the number and frequency of disasters and their widespread damage throughout the world increases. Government alone is no longer the answer. The whole community should be involved with public-private collaborations in place. There are a number of local "assets" that a community has available to assist in addressing natural and human-caused disasters. Asset-Based Community Development (ABCD) is an approach that involves both public and private sectors, with strong emphasis on using local resources. This approach includes collaboration among agencies who provide services to disaster victims, educating residents about potential hazards and how to prepare for them, and developing a coordinated set of policies that can be communicated to the public. Engaging in sound community development practices that involves

the Whole Community, including those who may be affected by the disaster (as well as youth and the elderly) is paramount to successful outcomes in post-disaster recovery. Planning for coastal community resiliency is a partnership approach with the future in the hands of those who live in the community.

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