

PLANNING FOR DISASTER RESILIENT ENVIRONMENTS: CALIFORNIA AND THE WORLD

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Nations and communities around the world are learning how to plan cities to avoid or lessen natural hazard disasters. In this article, the authors summarize professor Siembieda's lecture presented during an international workshop on planning of disaster-resistant communities when he shared his views on US and California experiences and policies.

In late 2009 people from 14 nations gathered in Taipei, Chinese Taiwan, to discuss "disaster risk deduction" in the workshop the *Framework of Long-Term Recovery Capacity Building* in the APEC - Asia Pacific Economic Cooperation.¹ The APEC is the premier forum for facilitating economic growth, cooperation, trade and investment in the Asia-Pacific region. Participants were planners, city officials, and researchers from countries that had experienced large natural hazard disasters in the last decade and that they want to plan their cities and towns in ways that will lessen the impact of the next natural hazard disaster. For example, the 2008 Wenchuan earthquake in China killed over 69,000 people and forced 11 million into some kind of transitional housing, and in Taiwan more than 400 people died as a result of the 2009 Typhoon Morakot that dropped nearly 3,000 mm. of rain on villages in just three days.

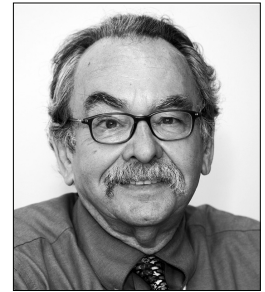
Since natural hazard disasters have become a threat to the well being of urban areas on all of these countries participants of the workshop wanted to share experiences and learn from each other. They especially wanted to know how to mitigate the impacts of natural hazard disasters and to speed the recovery process once an event has occurred. Professor William Siembieda was invited to attend and share with this international audience how California works to mitigate disaster impacts and helps to build resilient cities. In his lecture he shared the United States federal policy that influences the way states conduct their work. It is important to remember that under our federal form of government, it is the states that have land use authority, building authority and are charged with civil protection of their citizens. The following is a summary of the talk by professor Siembieda in Taipei.

California

California has a long history of being confronted with natural hazards. From wildfires and earthquakes to flooding and landslides, the state has spent billions of dollars and countless hours attempting to both prevent the occurrence of hazards as well as decrease the impact of them. A decade ago the focus was solely on providing post-disaster relief to impacted areas. Recently there has been a dramatic shift towards pre-disaster hazard mitigation.

Pre-disaster mitigation takes a multi-faceted approach. First, it attempts to reduce the likelihood of an occurrence of a disaster. This can entail anything from brush management (to reduce the likelihood of wildfires) to forbidding the building of structures on steep slopes (thereby diminishing the chance of landslides). Second, pre-disaster mitigation attempts to decrease the impact of natural hazards when they do occur. Examples of this include seismic retrofitting of buildings and river levee maintenance (such as in the Sacramento Delta area). The recent 7.0 earthquake in Haiti, as well as the destruction inflicted upon New Orleans by Hurricane Katrina, emphasizes the need for such pre-disaster mitigation efforts.

This shift from post-disaster recovery to pre-disaster mitigation can be seen in federal policy. Under the 1998 Federal Relief and Emergency Assistance Act (Stafford Act), the emphasis was on post-disaster mitigation.



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¹ The workshop ran November 30 and December 1, 2009.

Note: William Siembieda thanks Mr. Liang-Chun Chen, Director of the National Science and Technology Center for Disaster Reduction, Chinese Taipei for the invitation and support to participate and speak in the Workshop on the Framework for Long Term Capacity Building for Disaster Reduction in the Asia-Pacific Economic Cooperation; and to the APEC Task Force on Emergency Preparedness (TFEP), Quinton Devlin, Australian Co-Chair, and Tabrini, Indonesian Co-Chair, for conceiving and promoting the workshop.



Figure 1
BART station under
seismic upgrade in West
Oakland, Calif. (photo by W.
Siembieda)

localities to allow them to reduce risk through mitigation and build resilience through local and state pre-event planning. The theory behind this emphasis on local initiative is that state governments are best-suited to help build local capacity in mitigating hazards and that multi-hazard mitigation works better than single-hazard approaches.

The DMA places emphasis on identifying and assessing the risks, implementing measures for loss-reduction, and ensuring the continuance of critical services and facilities. In order to accomplish this, the DMA envisions a collaborative and adaptive bottom-up effort that involves multiple partners. It is a part of the emerging United States approach to hazard mitigation that places an emphasis on utilizing community and private partnerships that can be effective in implementing mitigation measures that benefit local stakeholders. Such local benefits include ensuring the continued functioning of community services (such as roads and electric power) throughout the duration of a hazard event. By involving more local stakeholders, the DMA takes a more holistic approach which encompasses physical, economic, and social (community building) elements.

In order to make these local mitigation initiatives feasible, the federal government has provided various financial incentives. Ideally, these incentives are paired with local funding measures. The Pre-Disaster Mitigation (PDM) Grant Program (which is funded through the DMA), which supports mitigation planning and projects before disasters happen, is an example of federal funding that is available for local use. This grant program is based on the underlying concept that making mitigation investments now helps to contribute to the reduction in post-disaster losses later. In fact, research has proven that one dollar of mitigation investment returns four dollars of reduced disaster losses. Another example is Community Development Block Grants (partially funded through the Disaster Resilience Initiative). CBDG provide money for measures that focus on the need for disaster resiliency (the ability to absorb the impact of an event) as well as recovery.

Because this new approach to hazard mitigation places its emphasis on local level enterprise, California has structured its mitigation efforts to facilitate the flow of money and initiatives to the state and local levels.

The California State Hazard Mitigation Plan (SHMP) establishes major goals, identifies and provides strategies for addressing the major hazards, and promotes the integration of efforts between state agencies and the private sector. Its four major goals are to: lower the loss of life, lower the loss of property, protect the environment, and promote

Figure 2
Who pays for the seismic
upgrade at the BART station
in West Oakland, Calif. (photo
by W. Siembieda)



integration of state agency efforts. From here, cities take these guidelines provided in the SHMP and make them applicable to their particular locality. In addition to assessing and strategizing about the local hazards, local hazard mitigation plans (LHMPs) attempt to involve local stakeholders in the hazard mitigation and funding efforts. These stakeholders can include non-profit groups or faith-based groups. Additionally, the LHMPs are closely integrated into the local land use policies and the General Plan Safety Element, thereby making them highly applicable documents. As of July 2009, California had 500 FEMA-approved local hazard mitigation plans (in the United States, there are over 19000 such plans).

There are many examples of the goals and objectives of both the SHMP and LHMPs being implemented into hazard mitigation projects. Billions of dollars in state funds have been spent on retrofitting highway bridges. At this point, over 75% of Cal Trans' 1,200 bridges have been retrofitted. A new state fire plan now addresses land use as well as fire protection and preparedness. Also, the state is in the process of extensively mapping the 200-year floodplain, which will facilitate more careful local flood planning. These new maps will replace the 100-year flood plain maps provided by FEMA.

Local-led initiatives include Berkeley, CA's investment of almost \$400 million in retrofitting school and municipal buildings. Santa Barbara, CA, meanwhile, has adopted the practice of investing money to buy out houses in areas with a high fire danger. This practice has already proven its worth in the recent Santa Barbara Tea Fire, which raced through a canyon filled with homes that the city had bought and vacated. Roseville, CA, through careful management of its floodplain, has changed from a city that flooded regularly to one that is nationally recognized for its floodplain management.

California is involving hundreds of thousands of its citizens in disaster preparation exercises such as the "Great Shakeout," which started in Los Angeles and has since spread to other areas of the state.

Final Remarks

The California model has been called "holistic" as it involves not one state agency, but many (Cal FIRE, Cal EMA, Department of Water Resources, Cal TRANS, Housing and Community Development, California Geologic Survey, the Coastal Commission, and the Department of State Lands, to name a few). There is a real desire to use land use planning, through the General-Plan process, as a key method of having cities and counties assess their hazard risks and to make the investment necessary to keep the citizens of California safe. It is the continued effort at improvement in the design, regulations (i.e. the 2010 Green Building Code), and participation of a broad group of stakeholders that make California a national model for disaster mitigation planning and for disaster risk reduction.

Figure 3
The State of California Multi-Hazard Mitigation Plan 2007; prepared with support from the City and Regional Planning Department and the Community Safety & Sustainability Group from Cal Poly; available from <<http://hazardmitigation.calema.ca.gov/>>

