

# Case Study: Climate Preparedness in the San Diego County Multi-Jurisdictional Hazard Mitigation Plan Update

## Background:

Since 2009, the San Diego region's local governments and public agencies have been working with ICLEI and The San Diego Foundation to address impacts of climate change in the region. This collaboration has resulted in developing the [Sea Level Rise Adaptation Strategy for San Diego Bay](#), which was followed by a series of workshops and meetings to facilitate the implementation of the strategy. Considering the fact that Hazard Mitigation plans are the traditional planning foundation for reducing risks from climate-related extreme events, stakeholders identified the Hazard Mitigation Planning update process scheduled for review by Federal Emergency Management Agency (FEMA) in 2015 as an opportunity not to be missed. ICLEI collaborated with the San Diego County Office of Emergency Services (OES) and Dr. Dan Cayan at Scripps Institution of Oceanography (SIO) to integrate climate adaptation into the region's Hazard Mitigation Plan update.

In 2013-2015, ICLEI assisted San Diego County and 18 incorporated local governments in integrating climate variability and climate change considerations into the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The project engaged these decision-makers as well as other stakeholders through trainings, workshops, surveys, and other channels. The overarching goal of the project was to build understanding and capacity among emergency managers to address climate threats through their existing work programs. The project objectives relative to this goal included:

- Generate understanding and buy-in among the region's emergency managers and other staff on the need to address climate change through hazard mitigation planning.
- Identify best practices for integrating climate change and hazard mitigation from the handful of communities around the nation that have pursued the concept.
- Evaluate staff needs and respond dynamically with existing research, data, guidance or other tools.

- Deliver data on climate impacts in a format that is consistent with emergency management practices.
- Develop insight about new climate threats that may be introduced to the MJHMP and a better understanding of how the risk of extreme events is changing in an era of climate change.
- Engage a broader set of regional stakeholders in the plan preparation than has historically participated.



"This collaboration of ICLEI with climate scientists, funded by The San Diego Foundation, will ensure we protect our residents while mitigating future costs to our region," County Supervisor Ron Roberts.<sup>1</sup>

1 See the source [here](#).

## Integrated climate adaptation and hazard mitigation planning



[FEMA](#) Framework for Hazard Mitigation Planning.

The practices of hazard mitigation and climate adaptation planning share many similarities. They both focus on actions in the built and natural environments to reduce risks. Both practices have a similar framework using vulnerability and risk assessment as the foundation of analysis. Both plans consider climate related natural hazards in risk assessment and focus on long-term risk reduction goals by developing plans, policies and projects. However, unlike climate adaptation, which focuses on climate-related hazards, the hazard mitigation plan scope includes man-made/human, technological, and natural hazards. Therefore in the area of climate-related natural hazards, such as flooding, heat waves, and wildfires the integration of these two practices is most applicable. Another key difference between these two planning processes is the type of data used in the risk analysis. Hazard mitigation planning has traditionally relied on analysis of historical events to characterize risk, but climate adaptation employs projections of future conditions derived from global climate models to characterize risk. Moreover, adaptation planning tends to use longer-term planning horizons than hazard mitigation planning does.

Despite all the similarities between hazard mitigation and adaptation planning, there are few examples of integrating these two processes. To identify the best practices, ICLEI conducted a [research](#) on other similar efforts. The lessons learned, listed below, were employed in designing the project work-plan.

- Discussing climate change early in the risk assessment phase
- Identifying the climate projection methodology and the suitability of the methodology in advance
- Building the capacity of local leads to effectively use the climate change information
- Including a diverse group of people in the process
- Developing ongoing channels of communication between the local hazard mitigation planning group and other local decision-making bodies.
- Defining terminology used in hazard mitigation and adaptation planning to avoid confusion



ICLEI Five Milestone of Climate Adaptation

## Establishing Stakeholder Groups

Effective stakeholder engagement is the foundation of a successful project. To ensure active involvement from stakeholders, ICLEI tapped into the existing Regional Sea Level Rise Working Group, formed by ICLEI during the San Diego Bay project, which served as the project Steering Committee. This group has been effective in coordinating the regional sea-level-rise efforts and is currently convened by the San Diego Regional Climate Collaborative.

ICLEI also formed a working group comprised of Unified Disaster Council (UDC) members. UDC is the governing body of the Unified San Diego County Emergency Services. The San Diego County Board of Supervisors and the emergency managers from the 18 incorporated cities are members of UDC. The County of San Diego Office of Emergency Services played the liaison role in this project to coordinate the communication with the UDC Working Group.

Finally, ICLEI collaborated with San Diego County in organizing two workshops to engage a broader stakeholder group in climate resiliency discussions, including organizations that had not previously engaged in regional adaptation efforts such as San Diego Gas & Electric and the County Sheriff's Office. These efforts scaled up the stakeholder engagement to a new level, which will hopefully be replicated in the plan implementation process and future planning updates.



## Technical Assistance

Input from both the Steering Committee and the UDC Working Group was integral to develop technical assistance framework. ICLEI conducted a UDC Working Group survey to better understand the participants' knowledge about climate change, the ways in which climate change projections are being used in practice (if any), and effective ways to provide relevant projection and strategies to the UDC Working Group. The results of the survey indicated that despite the fact that there was an understanding about the importance of planning and preparing for the projected impacts of climate change, over 90% of the survey participants had only used projected climate impacts in a preliminary and/or brief manner, or had not used them at all, in previous plans. The survey results also indicated that top three needs of emergency managers in integrating climate adaptation and hazard mitigation process were:

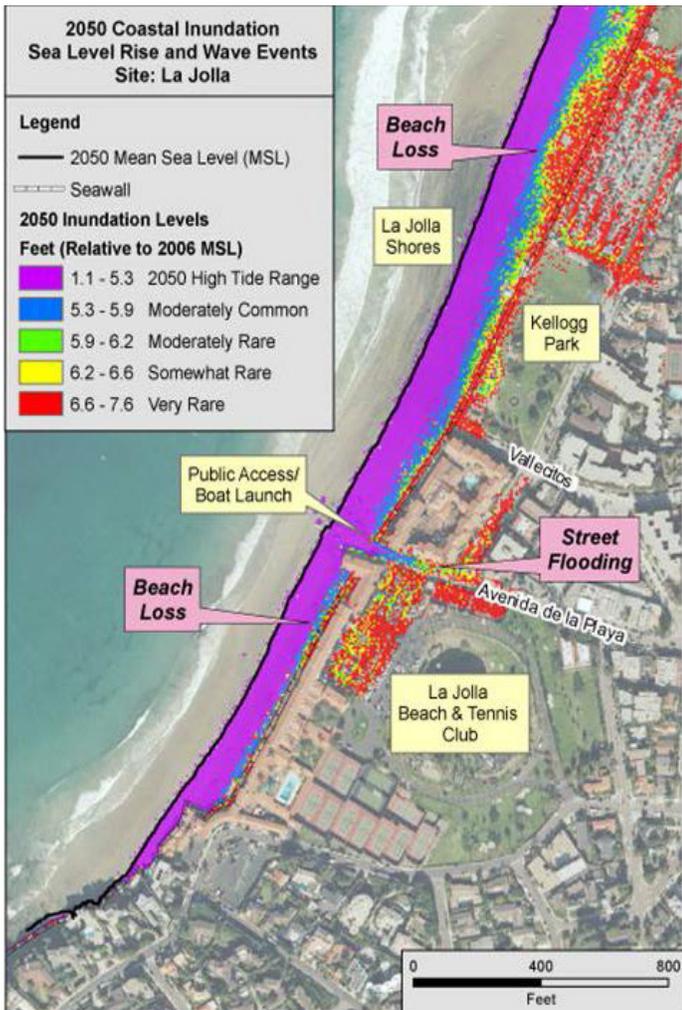
- climate change projections for local/regional level,
- information about the local/regional impacts of climate change,
- and information about how hazard mitigation strategies may evolve in response to climate change.

ICLEI hosted members of the UDC at a coastal resilience workshop in San Diego, held with city staff from Philadelphia and Tokyo and academics from the US and Japan. This provided an opportunity for the UDC Working Group to understand the effects of climate change from a global perspective.

In order to respond to the input from the Steering Committee and UDC Working Group, ICLEI carried out two training workshops focused on generating an understanding of how climate change affects hazard risks in the region and identifying risk mitigation approaches in the context of a changing climate. The first workshop content was focused on providing climate projections for the San Diego Region and key implications for hazards. Representatives from most of the cities in the region participated in the half-day workshop. ICLEI staff worked with Dr. Dan Cayan's team at SIO to provide climate projections for the San Diego Region and key implications of hazards to help city staff in understanding and analyzing the potential climate related hazards. It is important to note that many climate-related hazards, such as drought, heat, and wildfire, were already top priorities of emergency managers. Based on this training's content, ICLEI developed a [report](#) to be used by cities in the Hazard Mitigation Plan Risk Assessment.

The second workshop goal was to support emergency managers in incorporating climate change into new strategies. To define the workshop framework, ICLEI evaluated mitigation strategies from the 2010 Hazard Mitigation plans. The evaluation findings indicated that the majority of the strategies weighted towards emergency response despite the mitigation goals of hazard mitigation plan. To address this issue, ICLEI provided training on acting even with uncertainty, considering the long-term timeframe of climate related hazards, adaptive management, involving stakeholders in the planning process, and understanding a systems-based approach. In addition, information on potential strategies, as listed below, was presented. Potential strategies:

- Public health and social equity
- Land use and community design
- Green infrastructure
- Conservation, efficiency, and diversification strategies for water shortages
- Building codes and community design for wildfire mitigation



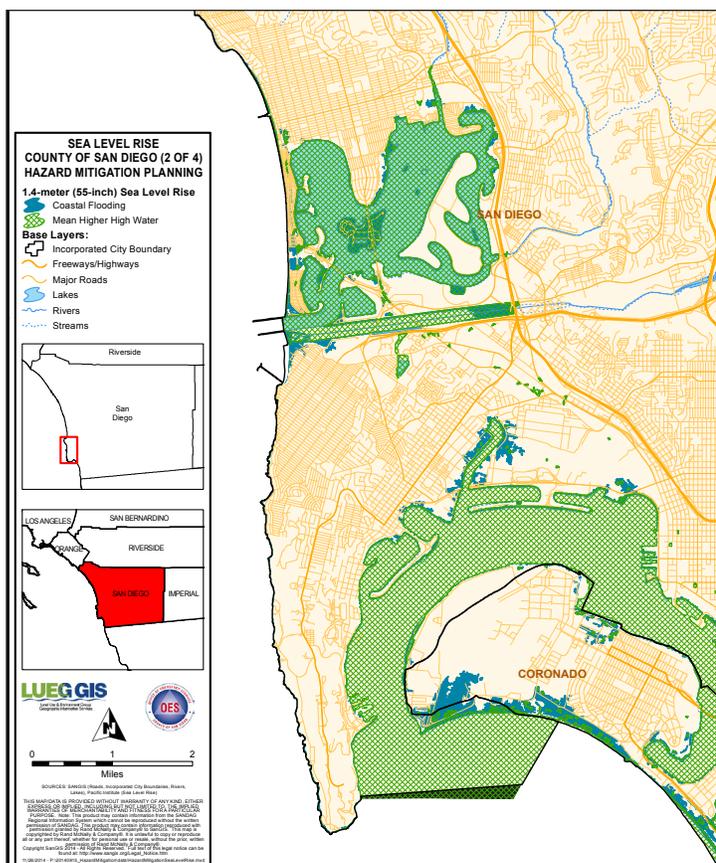
Green Roof: The Conrad Prebys Aztec Student Union at SDSU- Photo Credit [here](#).

To further support the Hazard Mitigation planning process, ICLEI designated a staff person to answer questions from the UDC Working Group as necessary. Finally, boilerplate language was provided for the Plan's Risk Assessment, summarizing the data into a format that was consistent with how risks were described and evaluated in the Plan.

## Project outcomes:

San Diego County, in collaboration with local emergency managers, prepared and submitted the Hazard Mitigation plan for FEMA review in June 2015. Through intensive trainings, technical assistance, workshops, and provision of data, the project succeeded in increasing knowledge of emergency managers in the effects of climate change and building capacity to incorporate climate-related strategies in hazard mitigation planning. Actively engaging Steering Committee members, comprised of a diverse group of professionals from multiple local governments, broadened the traditional outreach of the hazard mitigation planning.

Assessment of the San Diego County Multi-Jurisdiction Hazard Mitigation Plan indicates that this program resulted in successfully incorporating the climate change related risks in plan update. To be consistent with the trainings provided to emergency managers, the description below analyzes how the plan incorporated climate change in hazard profiles, risk assessment and strategies.



## Hazard profiles and risk assessment:

Physical characteristics of a hazard and a determination of various hazard descriptors, including magnitude, duration, frequency, probability, and extent is determined in hazard profiles. The plan identified climate change as an emerging risk and provided projections of heat waves, sea level rise, high sea level events, and annual average temperature. Due to the effect of the climate change, extreme heat and severe winter storm, which were not previously identified as hazard, were considered in the plan update. Also, the impact of climate change on other hazards, such as coastal flooding, drought and fire, are considered in the plan for the first time. Goals, objectives and actions (Strategies):

The regional UDC members developed the hazard profiles and risk assessment sections collaboratively, but individual Local Planning Groups were in charge of developing strategies in each local jurisdiction. Therefore, cities' strategies vary in addressing climate change. For example, City of Carlsbad identified the fire hazard exacerbated by climate change among top five hazards. It also identified reducing the possibility of damage and losses to existing assets, including people, facilities and infrastructure due to severe weather and/or climate change as one of its top seven goals. City of Encinitas is another jurisdiction that included the climate considerations in its promoting disaster resistant future development goal. The relative objective is addressing future conditions resulting from climate change and mitigating future environmental impacts. City of Encinitas has identified four actions below to implement this objective:

- Continue to promote water conservation as a means to mitigate future drought conditions

- Develop a Climate Action Plan that addresses AB32 and SB375 and continue to promote sound environmental management practices throughout all city departments and services through an annual review and update of the Environmental Action Plan.
- Continue to require development projects comply with the California Environmental Quality Act (CEQA).
- Continue to utilize public facilities as “cool zone” sites on days when weather conditions are excessively hot.

### Lessons learned:

The project engaged stakeholders that were not previously involved in the region’s climate change discussions, which posed both an opportunity and obstacle to reaching a project goal of integrating climate change into the MJHMP. The opportunity to train emergency managers, as a primary group responsible for risk reduction on climate change, was successfully delivered on. Many participating emergency managers indicated an increased level of knowledge and skills as a result of the project. However, analysis of the treatment of climate in the resulting MJHMP suggests that more sustained capacity-building will be required to significantly advance the state of this professional practice in the region.

Success in rigorously addressing climate risk in the MJHMP was mixed. The topics that were covered in the workshops in detail, such as hazard identification and hazard profiles, were well-integrated in the plan. On the other hand, the hazard mitigation strategies did not deeply reflect climate-related considerations that ICLEI promoted in the project, such as longer time horizons, adaptive management and uncertainty, or systems-based approaches. ICLEI’s capacity to contribute to the risk analysis and prepare language for the section was an important factor, and it is not clear that even the risk sections would have reflected climate considerations if this assistance had not been available.

The mixed results between risk analysis and preparedness strategies may also reflect the plan development process and organization. The hazard profile and assessment was developed collectively by the participating cities at a regional level, which was the scale at which ICLEI’s intervention was delivered. However, the strategies were developed at the local jurisdiction level, and included additional staff that did not participate in trainings. Equipping emergency managers with materials to educate relevant staff could have been helpful to transfer the knowledge within the cities.

The professional culture of the emergency managers, in this case mostly fire fighters, was a special consideration in developing the technical assistance approach. Research has shown that hazard mitigation practice is often focused on responding to immediate or short-term hazards, rather than long-term preparedness. Incorporating long-term climate change impacts into hazard mitigation plans was an uncommon approach for emergency managers, some of whom were not eager to make changes to the traditional approach or to go beyond the minimum requirements as prescribed by FEMA and the California Emergency Management Agency. In addition to some degree of professional inertia, it was not clear that the MJHMP was a high priority for some jurisdictions, as reflected in the resources available to prepare the plan. No consultants were engaged, lead staff were juggling this plan with many other responsibilities, and as a result much of the content was simply copied over from the previous 2010 plan update.

Changing the professional culture and priorities will require extensive engagement, such as one-on-one meetings and continuous education opportunities. Although there are certain benefits in sustained engagement with emergency managers, another possibility is to more meaningfully include other departments such as Planning or Sustainability Directors who may be more comfortable with long-range planning in this process. This can also result in building the capacity of emergency

managers in the long term.

This project provided a unique opportunity for emergency managers, who are on the front lines combating the impacts of climate change, to advance their knowledge in preparedness area. Despite the challenges, this project was a key step forward in building a resilient region and the lessons learned can help advance the practice both within the region and nationwide.

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