BUILDING A COMMUNITY RESILIENCE TOOL FOR THE U.S. EPA

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How are we thinking about resilience?

• Being prepared to respond and to recover

• Learning from the event to prepare for next time
  ➤ What worked well and what didn’t
  ➤ Build on what happens in the moment

• Adapting to climate change
  ➤ Modify the built environment
  ➤ Mainstream into existing planning
  ➤ Social & institutional changes

• Participation leads to greater co-benefits
  ➤ Working together helps identify win-win solutions
  ➤ Enhances credibility, legitimacy, salience
Considerations for resilience planning

• Extreme events can interact with environmental and man-made hazards
  ➤ E.g. Will there be enough water to respond to a radiological incident during a drought?

• Events can have multiple layers and cascading impacts
  ➤ E.g. A storm can cause power loss which interrupts drinking water treatment which causes a waste management issue (plastic water bottles)

• Social and economic factors matter as well as geography
  ➤ E.g. Community cohesion can lessen vulnerability

• Climate change compounds existing inequities
  ➤ E.g. Low-income households harder hit by food price volatility
  ➤ Impacts on the most vulnerable have long-term consequences

• How to prepare for extreme events that are beyond the historical range of extremes?
EPA Community Resilience Planning Tool

- Multi-sector planning for hazard mitigation climate adaptation
- A question and data-based process for identifying vulnerabilities
- Self-assessment of indicators for exposure/preparedness, response, and learning

Evaluating Urban Resilience To Climate Change: A Multi-Sector Approach (Final Report)
https://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=322482
<table>
<thead>
<tr>
<th>Sector</th>
<th>Example Indicator</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>% of city culverts that are sized to meet future stormwater capacity requirements</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Energy</td>
<td>Average hours customer energy outage in major storm</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Land Use</td>
<td>% of city area in 100-year floodplain</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>% of wetlands lost</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Economy</td>
<td>Is the economy of the urban area largely independent, or is it largely depend on economic activity on other urban areas?</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Transportation</td>
<td>Are policies and programs in place to increase access to transportation under climate change events for vulnerable groups?</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Waste</td>
<td>Have waste transportation routes been reevaluated for disruptions from recurrent flooding?</td>
<td>Qualitative</td>
</tr>
<tr>
<td>People</td>
<td>For a precipitation related flood event, are adequate accommodations available to evacuate the most vulnerable groups?</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Information and Communication Technology</td>
<td>Has capacity been developed to evaluate the effectiveness of an early warning system being employed to warn of an extreme event?</td>
<td>Qualitative</td>
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</tbody>
</table>
Results
Example:

- Climate stressor: drought
- Impact on urban areas (peer reviewed literature): decrease in groundwater supply, impact on energy production
- Indicators: Does the water system have emergency interconnections with adjacent water systems or other emergency sources of supply?
- Relevant: yes/no
- Importance: 1 (not very important) – 4 (very important)
- Resilience: yes/no
- Score = resilience x importance
How and when to use it

• For identifying actions

• To facilitate convening and on-going dialogue about becoming more resilient

• Make sure voices are heard
  ➢ Listen to different populations and community groups
  ➢ Reach out to historically underrepresented
  ➢ Engage multiple sectors

• To assess how you’re doing as planning progresses

• When you’re data poor and information rich
Social Vulnerability Assessment

https://svi.cdc.gov/
Vulnerable Groups

Under-resourced
- People without sufficient resources to prepare and recover quickly; relatively small disruptions in work or small losses can have large and cascading impacts.
- E.g. low-income, low-wealth, no transportation, unhoused, small businesses
- Need resources to prepare, mitigate and recover; Investments in vulnerable and distressed and disinvested areas

Health and safety concerns
- People with health issues or special characteristics or circumstances that increase their risk of experiencing harm from a disaster.
- E.g. Children, elderly, disabled, outdoor or response workers, those with health problems
- Need special preparation and rapid access to care or safe facilities.

Marginalized, isolated or non-mainstream culture
- People who have difficulty accessing traditional assistance, are excluded from support due to program rules or societal discrimination, or have unique cultural needs
- E.g. non-English speaking, non-citizens, racial/ethnic/cultural minorities, LGBTQ, single parent families, etc.
- Need well-targeted and culturally appropriate information and outreach. Should be included in collaborative disaster planning, recovery, response and monitoring.
<table>
<thead>
<tr>
<th>Vulnerability category</th>
<th>Under-resourced</th>
<th>Health and safety concerns</th>
<th>Marginalized or Isolated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Over-arching mitigation and risk reduction needs</strong></td>
<td>Resources to prepare, mitigate and recover; Investments in vulnerable and distressed and disinvested areas</td>
<td>Ability to prepare for and access care or relocation rapidly and easily pre and post-disaster; networks of healthcare and social work emergency response professionals</td>
<td>Well-targeted and culturally appropriate information and outreach; Collaborative disaster planning, recovery, response and monitoring; Inclusive and equitable support</td>
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<tr>
<td><strong>Storms</strong></td>
<td></td>
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<tr>
<td>Infrastructure and insecure structures/dwellings</td>
<td>Upgraded stormwater and water retention infrastructure, Funding for storm proofing homes or businesses</td>
<td>Assessment and plan for insecure dwellings; Information and outreach about storm risks and preparation</td>
<td>Assessment of impact of degraded infrastructure and insecure structures; investment in upgrades; Translated and culturally appropriate information and outreach about risks and available assistance programs</td>
</tr>
<tr>
<td>Evacuation</td>
<td>Collaborative evacuation planning; Transportation assistance, food and shelter; Replacing lost wages or revenue</td>
<td>Preparation for those who are unable to evacuate; Evacuation assistance and shelter appropriate to needs</td>
<td>Collaborative evacuation planning; Information and outreach about evacuation and risk from storms; safe and inclusive shelter for all</td>
</tr>
<tr>
<td>Recovery from loss</td>
<td>Recovery assistance that is accessible to hourly wage workers Affordable insurance; with minimal documentation burden; outreach to hourly wage employers</td>
<td>Assistance replacing lost medication and equipment; Continued caregiver support in temporary relocation, recovery assistance</td>
<td>Analysis of gaps in accessibility; assistance and outreach applying for aid; Inclusive assistance policies, e.g. undocumented, non heads of household;</td>
</tr>
<tr>
<td><strong>Heat</strong></td>
<td>Renewable energy access and personal air conditioners; energy bill assistance; Public and accessible community cooling centers</td>
<td>Information about heat risks; Access to care for heat related issues; accessible cooling centers for people with functional needs</td>
<td>Translated and culturally appropriate information and outreach about risks and ways to avoid heat stress; safe and inclusive cooling centers</td>
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THANK YOU

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