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?

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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

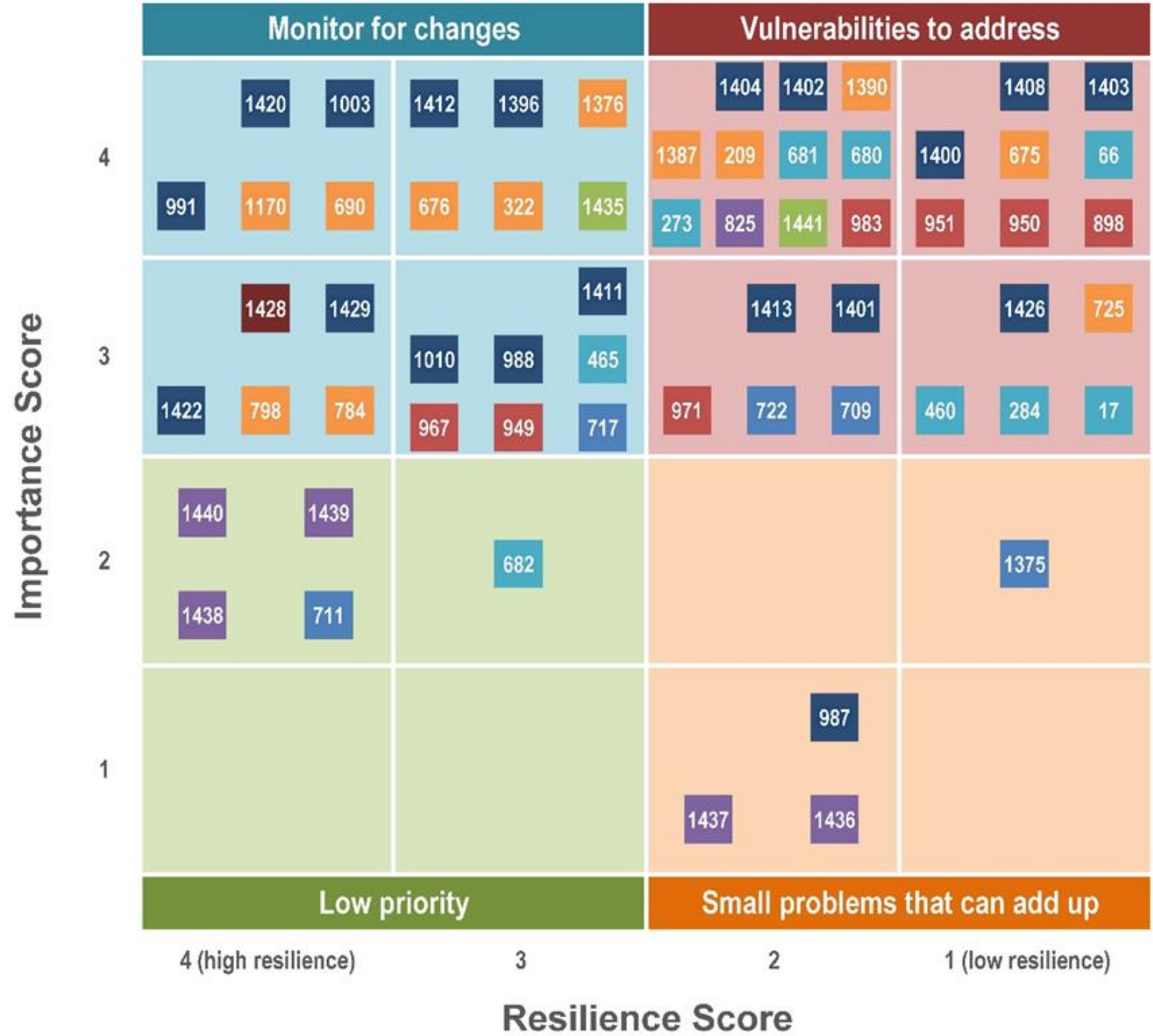*Evaluating Urban Resilience To Climate Change: A Multi-Sector Approach (Final Report)*
https://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=322482

Sectors and Indicators

Sector	Example Indicator	Type
Water	% of city culverts that are sized to meet future stormwater capacity requirements	Quantitative
Energy	Average hours customer energy outage in major storm	Quantitative
Land Use	% of city area in 100-year floodplain	Quantitative
Natural Environment	% of wetlands lost	Quantitative
Economy	Is the economy of the urban area largely independent, or is it largely depend on economic activity on other urban areas?	Qualitative
Transportation	Are policies and programs in place to increase access to transportation under climate change events for vulnerable groups?	Qualitative
Waste	Have waste transportation routes been revaluated for disruptions from recurrent flooding?	Qualitative
People	For a precipitation related flood event, are adequate accommodations available to evacuate the most vulnerable groups?	Qualitative
Information and Communication Technology	Has capacity been developed to evaluate the effectiveness of an early warning system being employed to warn of an extreme event?	Qualitative

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

Convene stake-holders

Assess resilience

Plan Actions

Take Action

Monitor & Learn

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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.

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Exposure and impacts \ Vulnerability category		Under-resourced	Health and safety concerns	Marginalized or Isolated
Over-arching mitigation and risk reduction needs		Resources to prepare, mitigate and recover; Investments in vulnerable and distressed and disinvested areas	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	Well-targeted and culturally appropriate information and outreach; Collaborative disaster planning, recovery, response and monitoring; Inclusive and equitable support
Storms	Infrastructure and insecure structures/ dwellings	Upgraded stormwater and water retention infrastructure, Funding for storm proofing homes or businesses	Assessment and plan for insecure dwellings; Information and outreach about storm risks and preparation	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
	Evacuation	Collaborative evacuation planning; Transportation assistance, food and shelter; Replacing lost wages or revenue	Preparation for those who are unable to evacuate; Evacuation assistance and shelter appropriate to needs	Collaborative evacuation planning; Information and outreach about evacuation and risk from storms; safe and inclusive shelter for all
	Recovery from loss	Recovery assistance that is accessible to hourly wage workers Affordable insurance; with minimal documentation burden; outreach to hourly wage employers	Assistance replacing lost medication and equipment; Continued caregiver support in temporary relocation, recovery assistance	Analysis of gaps in accessibility; assistance and outreach applying for aid; Inclusive assistance policies, e.g. undocumented, non heads of household;
Heat	Heat stress	Renewable energy access and personal air conditioners; energy bill assistance; Public and accessible community cooling centers	Information about heat risks; Access to care for heat related issues; accessible cooling centers for people with functional needs	Translated and culturally appropriate information and outreach about risks and ways to avoid heat stress; safe and inclusive cooling centers

THANK YOU

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