KEY INSIGHTS INTO PRIORITIZING RESILIENCE STRATEGIES

C2ES CENTER FOR CLIMATE AND ENERGY SOLUTIONS

Governments and businesses are acting to promote resilience to climate change impacts. However, resilience planning does not occur in a vacuum. Organizations have multiple goals, including satisfying stakeholders, meeting sustainability objectives, addressing traditional pollution issues, and advancing social equity—and they operate under budget constraints as well. To explore how public and private organizations select which resilience strategies to invest in first, and inform this process for organizations just getting started, C2ES convened a Solutions Forum workshop with leaders in the field. Workshop attendees represented municipal and state governments, federal agencies, small businesses, manufacturers, technology companies, energy companies, and financial institutions. This document summarizes the key insights from the workshop, provides recommendations that resilience planners and funding agencies could adopt to support improved climate resilience, and identifies areas where future effort is needed.

C2ES's Solutions Forum aims to explore critical issues, develop collaborative approaches and create a set of practical solutions through a series of public and private forums around the country. To learn more about C2ES's Solutions Forum, visit https://www.c2es.org/our-work/solutions-forum/.

KEY INSIGHTS

Organizations often prioritize resilience strategies that simultaneously address other objectives.

Adapting to the impacts of climate change is part of a larger set of goals and objectives. Companies strive to maximize shareholder equity, attract good talent, and increase customer satisfaction. Local governments seek to make their communities attractive places to live and work, and many are addressing the pressing challenges of poverty and racial inequality. Identifying strategies that meet multiple objectives is key for ensuring those strategies are prioritized and implemented. A few of our workshop participants were including climate resilience in quantitative multiple-criteria decision analysis, but most were considering multiple objectives in more qualitative ways.

For example, a local government present at the workshop was developing a plan to achieve 100% clean energy for the community's electricity needs. While the plan evaluated renewable energy options, it also stressed the importance of implementing energy efficiency programs because these programs: 1) reduce total energy use; 2) lower the energy burden for many of the city's low-income residents; and 3) improve community resilience to an increased number of high-heat days that are an impact of climate change. Of course, other strategies exist and are being considered to help cope with increasing temperatures, but energy efficiency addresses multiple concerns for the city including goals about equity and affordability and does not require a major capital investment.

Short funding and planning cycles can underestimate returns on resilience.

Returns on some resilience investment strategies, especially infrastructure projects, occur over longer timeframes than some organizations' typical operations expense cycles. For instance, local government and

private climate resilience investments today are often funded through hazard mitigation plans, capital expenditures programs, or land planning programs all with 5 to 10-year time frames. Benefit-cost analyses limited to benefits accrued over shorter timeframes often make it difficult to justify upfront costs. A focus on disaster costs avoided implies that returns on investment can only be realized if there are disasters, which may be unlikely in the near term but nearly guaranteed over the long term. Including climate resilience in comprehensive plans and strategic plans that use longer time horizons can help identify which investments to make when funding is available and provide an opportunity to consider long-term benefits. While these plans are often not binding or guaranteed to have funding for the entire period of the plan, they do provide an opportunity to identify longer-term options that may be necessary and strategic.

Resilience is undervalued and underfunded.

Resilience and hazard risk mitigation can reduce exposure to climate and weather risk, avoid damages, help cities save money on services, protect investor interests, and improve businesses' bottom line. For example, the National Institute of Building Sciences finds that hazard mitigation projects have an average benefit-cost ratio of 6:1, with some investments, such as first-floor elevations in coastal states, as great as 17:1. Despite this, our workshop participants observed that resilience strategies are often underfunded. More importantly, they noted, resilience is currently undervalued by decision-makers with the consequence that fewer cost effective resilience strategies are implemented than should be.

One factor that workshop participants cited for undervaluation is that the federal government currently acts as the "insurer of last resort," providing disaster and recovery assistance after a natural disaster for even the highest-risk properties and infrastructure. This disincentivizes resilience efforts to reduce risk before disasters, even those that might be highly cost effective such as relocating people and assets at risk. Additionally, federal disaster relief and recovery appropriations are not subject to federal budget caps, whereas pre-disaster resilience spending requires Congress to balance other funding priorities. This limits the federal funding available for resilience, while leaving disaster spending unchecked.

Many past resilience efforts were financed through disaster recovery assistance or insurance payments after an extreme weather event. Response and recovery funding can constrain resilience strategy choice to just those addressing a specific historical threat, without considering multiple climate impacts or future conditions. Workshop participants noted that while some changes have been made in federal programs in response to recent disasters, strategic resilience planning and the ability to implement multi-benefit resilience strategies is still constrained in a comprehensive way.

Another factor that workshop participants identified was a lack of metrics for resilience benefits, apart from disaster loss avoidance. Resilience to climate change impacts and extreme weather events is difficult to quantify, and while there are some nascent resilience standards for use in industry or local government planning, none are widely implemented or accepted at this time.

A solution that workshop participants identified for overcoming the undervaluation of resilience is to include the value of co-benefits when comparing the costs and benefits from various resilience strategies. Many tools exist for monetizing these benefits and often these strategies deliver multiple benefits. Aggregation of benefits for each resilience strategy can help support planning and investment decisions. The series of C2ES fact sheets listed below identifies and compiles examples of how local governments have estimated the monetized co-benefits of their resilience strategies.

Mainstreaming is effective but can have drawbacks.

Leaders in public and private sector climate resilience planning are often incorporating climate resilience, or "mainstreaming" resilience, into existing planning processes, operations, funding requests, and (when necessary) disaster recovery. Some examples include Rhode Island's policy requiring coastal development to consider future sea levels, and the Port Authority of New York and New Jersey's design guidelines requiring inland development in floodplains to add building elevation above the required elevation.

Mainstreaming helps organizations improve their resilience to climate change impacts, but can have drawbacks if only the easiest to implement strategies are pursued. Addressing climate change impacts will require new procedures, programs, and investments. Climate

change will also bring cascading impacts and unanticipated risks that existing processes may be unequipped to address, especially if they are housed in siloed agencies or departments. It may be hard for resilience planners to create and fulfill a long-term vision for resilience through mainstreaming alone, as it can restrict them to only piecemeal application of strategies. Resilience must be a cross-organization effort, with authority and resources combined to address the risks holistically and comprehensively.

Word choice frames climate risks and opportunities.

Planners in corporate or public roles who are leading resilience initiatives often must incorporate climate resilience into other goals set by leadership, such as risk management or sustainability. Resilience strategies should be described in the language and in alignment with objectives of the department that would implement or fund a given strategy.

Language surrounding resilience initiatives can also be critical to avoiding political resistance. Several workshop attendees shared their experience of intentionally avoiding the term "climate change" in order to keep the effort to advance climate resilience planning out of the political discussion. If the term "climate change" creates obstacles, resilience planners instead use terms like "natural hazards." Municipal resilience planners also discussed framing strategies in terms of their co-benefits such as hazard mitigation planning or storm water management. For instance, discussing resilience in terms of floodplain risk and emergency planning aligned one community's resilience needs with their hazard mitigation process, creating a vehicle for resilience action and access to funding.

Similarly, businesses often make the case for including climate-related risks in their enterprise risk management processes as a way of maintaining business continuity or responding to shareholder or financial market concerns about climate risk. For many cities and businesses, the strategies that are implemented first are those that have a number of co-benefits and can be discussed in these other terms.

Additional effort is required to promote greater public-private sector collaboration.

The climate challenge is too large to solve by sectors working in isolation, but, as we observed in our workshop, differing leadership objectives can create barriers to collaboration. Specifically, many local government leaders view resilience through the lenses of social equity and environmental quality while many businesses view resilience through the lenses of business continuity and reducing operational costs and risks. Recognizing the great value that these objectives all have to society, it is still critical to push for greater investment in climate resilience in both sectors and cooperation between the sectors (as well as academic and civil society organizations) to leverage the investments to the collective greater good.

Communities should work to engage local businesses on climate risk and the need for action. Where opportunities exist, framing resilience in terms of private-sector interests can be helpful. Identifying the interests and motivations of all key stakeholders can create space for more involvement in the resilience planning process, and successful implementation of strategies.

Based on our conversations, we have identified the following strategies that have the greatest potential for overlapping interest from both sectors and thus lay the foundation for future improved collaboration on climate resilience.

Collaborative strategies include:

- **Job Creation:** Resilience strategies that create local jobs. Governments will be interested in increasing employment while businesses will be interested in local economic growth. Example strategies include programs that hire local workers to install green infrastructure or building energy efficiency upgrades.
- **Energy Efficiency:** Reduced municipal and community energy consumption through measures that improve climate resilience. Governments will be interested in reducing their own energy costs as well as lowering the energy burden in the community. Businesses are interested in reducing their energy costs and improving operational efficiency. Example strategies include incentives for cool roofs and monitoring and repairing water leaks.
- **Infrastructure Upgrades:** Infrastructure modernization is desirable to local governments because it provides tangible improvements for residents and, often, environmental benefits. Businesses will be

interested in the economic opportunities provided. Example strategies include smart grids, nature-based water and sewer improvements, and transportation projects.

- **Resilience Hubs:** Facilities that promote community resilience to natural disasters and community revitalization, with careful consideration of equity and avoiding undesirable gentrification. Governments will be interested in supporting stronger communities and greater social cohesion. Businesses, especially small and local businesses, are interested in local economic development.
- **Disaster Risk Reduction:** For communities facing severe and immediate climate change impacts, strategies to reduce those threats will improve external perceptions about the livability of that community, prevent possible declines in property values, and help attract new investment. Businesses and government officials in these communities may put a greater value on climate resilience since the threat of climate change is more salient to them. Communities to which this may apply include coastal cities along the East Coast and Gulf Coast, communities near the wildland-urban interface, drought-prone communities, and cities in the South and Southwest that already have periods of extreme heat each year.

CONCLUSION

Organizations' non-climate priorities compete but also overlap with the growing threats of climate change that demand resilience action. Choosing strategies that will have the greatest benefits requires that organizations take an interdisciplinary, collaborative approach and consider an array of potential benefits, some of which are realized over longer time horizons than other investments. Cities and companies are taking some of these steps, but face political, funding, and administrative barriers including the complexity and uncertainty of this work and the undervaluation of resilience benefits.

Future work must help resilience planners identify the set of benefits that certain strategies provide, including disaster risk reduction, sustainability, public health and safety, cost savings, and job creation – and how they can be quantified. As the field becomes more mature and best practices are developed, there will be greater opportunity to measure the success of resilience projects with standard metrics.

There is a need to continue to identify areas of overlapping interest in resilience for the private and public sector to support truly interdisciplinary and collaborative planning. Resilience investments can make communities and local economies less vulnerable to climate change and communities more livable for all residents. Long-lived, capital-intensive assets that are built today, like public infrastructure and manufacturing facilities, are expected to maintain their useful capacity through mid-century and beyond, so the time to start planning is now. Funding organizations, namely the federal government, philanthropic organizations, and corporate finance also have a role to play in ensuring money is invested in projects that are resilient to the climate change impacts that are happening today and will grow in the coming years.

C2ES thanks Bank of America for its support of this work. As a fully independent organization, C2ES is solely responsible for its positions, programs, and publications.

Other C2ES Resources:

Policy Options for Climate-Resilient Infrastructure, January 2018
https://www.c2es.org/document/policy-options-for-climate-resilient-infrastructure/

Resilience Strategies for Wildfire, November 2018
https://www.c2es.org/document/resilience-strategies-for-wildfire/

Resilience Strategies for Drought, October 2018
https://www.c2es.org/document/resilience-strategies-for-drought

Resilience Strategies for Power Outages, August 2018
https://www.c2es.org/document/resilience-strategies-for-power-outages/

Resilience Strategies for Flash Flooding, February 2018
https://www.c2es.org/document/resilience-strategies-for-flash-flooding/

Resilience Strategies for Extreme Heat, November 2017
https://www.c2es.org/document/resilience-strategies-for-extreme-heat/

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2101 WILSON BLVD. SUITE 550 ARLINGTON, VA 22201 703-516-4146 **C2ES.ORG**