

“Planning, Implementing, and Evaluating Successful Adaptation and Resilience Projects”
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Climate change is complex, with many ways to measure. You can measure climate change itself through indicators like ocean acidification or global temperature, index climate vulnerabilities, or use resilience indicators which are a bit more nebulous.

Start with defining resilience. For this literature review, Maite Duquela and AnnaClaire Marley used a definition from the IPCC, which focuses on a system’s ability to sustain identity and structure while also being able to change. This definition also shows how tracking resilience is complicated as many dynamic parts need consideration.

There are many challenges associated with measuring climate resilience, including: (1) Different definitions: different entities use different definitions, emphasizing innovation or the ability to sustain or transformation;. (2) Context specific: specific to hazards and locations; (3) Limited data and resources: data is hard to come by, especially the baseline measurements needed for climate resilience indicators; (3) Lack of community engagement: a community doesn’t always see resilience as something you achieve with an engineering solution.

The team conducted a literature review of relevant documents and informational interviews, leading to a database with over 200 indicators. Most indicators fell in one of three categories: society and equity, management and governance, or infrastructure and operations. An actor’s conceptualization of resilience drives the types of indicators they create. Common conceptualizations in the literature included viewing climate resilience as the state of the system, as a process, or as an outcome. Looking at a mangrove project, viewing climate resilience as the state of the system might lead to creating an indicator that measures acres of healthy mangrove habitat. A process emphasis can measure the number and progress of restoration projects and plans, and an outcomes approach can measure the area of erosion and flood risk reduced following a restoration project.

Maite Duquela continued:

Organizations and projects can ground themselves in resistance to harm, persistence to harm, or transformation. Consider a small NGO in a fishing village hears from residents that catch and conditions have worsened. Looking at strengthening systems, the NGO noticed a gap between projections from the government’s decadal assessments and actual conditions. It worked with the government to create a streamlined interagency process to create annual assessments. Focusing on building capacity, it could host workshops aiming to collaboratively create key indicators with the community and work those into the government’s strategic plan. And looking at structural issues, it could organize to foreground reported community conditions and a social vulnerability index.

This schema serves not as an imposing perspective, but as a template for starting conversations.

In the q&a, one participant asked if the researchers saw commonalities across the database. They said one indicator could often serve as proxy for another. Discussion ensued about adaptation’s lack of a supervalent indicator (like GHGs) and about the value of starting an inquiry by clarifying a constituency’s problem and goals and using that qualitative information to create indicators. Marley said it’s important to

use indicators that matter to the people impacted, and Duquela answered a question about survey-driven indicators by saying that self-reported connectedness scores came from a survey instrument.

Lindsay Willson of CDM Smith presented a summary of her firm's work to develop an equity focus in Michigan Department of Transportation's Resilience Improvement Plan. She listed some climate-change woes affecting the agency, including dam failures, erosion, heavy precipitation, and erratic and extreme temperatures. She then explained that the state won a PROTECT grant from the federal Department of Transportation to create a resilience improvement plan.

The grant charges agencies with looking at current and future disturbances to identify vulnerabilities and sensitivities. A robust plan can reduce cost-share requirements for federal funding by 10 percent.

CDM Smith set out to align with other statewide agencies' plans, produce location-specific case studies, draw a roadmap for implementation, and create an online mapping tool. (Eventually, designers hope this tool will facilitate information-sharing across agencies and with the public.)

In consultation with stakeholders and in an effort to align with Justice40 requirements, the firm used disadvantaged community data as part of each asset's criticality score. In the final methodology, planners adjusted weights to emphasize local data on past flooding issues and separated the calculation of flood hazard into stormwater flooding and coastal/riverine flooding. They also replaced one local case study due to feasibility concerns. CDM Smith also brainstormed the definition of success, indicators, and metrics with stakeholders. Willson emphasized the value of working with data that's already being collected. In the discussion, participants grappled with the risk that a focus on maintaining bridge operations could destroy habitat or otherwise spur maladaptive results, and with the challenge of setting five-year Justice40 indicators while knowing that conditions will change. The work to balance meeting benchmarks with collaborative engagement, Willson said, is something to continually seek. But, she added regarding a question about the assessment's availability to the public, the process led agencies and entities who rarely spoke to collaborate. She called this a major win with promise.

Tess Sprague of Brown & Caldwell led an interactive training on implementing adaptation strategies with a brief presentation and a World Cafe activity to support participant co-learning. She advised participants to "act on data" and existing evidence bases to develop resilience goals and inform sequencing of adaptation and mitigation strategies, bearing in mind that adaptation and mitigation projects should be pursued in parallel as adaptation strategies' effectiveness reduces with an increasingly warming environment. She shared a range of common challenges to implementation, recommendations to encourage success, and discussed adaptation pathways. She also shared in-practice implementation examples highlighting adaptation pathway sequencing, institutional infrastructure for drought management, living shorelines for nature based solutions, and data visualization for cross-departmental collaboration.

On the heels of this input, participants engaged in a World Cafe activity to discuss their resilience goals and baseline, what drivers and challenges influence implementation, and how to monitor progress in achieving a more resilient future. This monitoring includes, Tess said, tracking agreed upon expectations and KPIs, establishing adaptation pathways and lead times, and understanding triggering events from changes in conditions.

In discussion, participants emphasized the value in being able to change goals and the reality of funder-imposed timing, and discussed ways in which more fully documenting efforts' stories could help define and sustain indicators that speak to a relevant problem. They also shared the common challenge of

how to successfully communicate and document qualitative metrics for measuring the success of implemented adaptation strategies, stating that perhaps we need a new way of approaching what is currently less tangible.

Here are some concluding notes from your facilitators:

Important considerations included asking questions like "What are you being resilient to?" "How are you being resilient?" "Resilience for who?"

The definitions being used matter, and who chooses those definitions matters (e.g., the funder, the community, the research team)

There was a sense that resilience needs to include an element of moving/transitioning to a future better than the past. Returning to the previous condition may not be considered desirable in many circumstances

Timing and sequencing are often driven by funder deadlines and funding cycles. Oftentimes the scope and goals of a project are tied to the budget and the funder goals.

Staff capacity (or lack thereof) was cited as a limiting factor for timing and sequencing

Institutional barriers and bureaucracy affect timing and sequencing

Laws, policy, and permitting are external factors that affect timing and sequencing.

ICLEI's "spectrum of implementation readiness" was mentioned as resource to address the problem of a continual planning cycle and potential failure to launch projects.

Continue to revisit your goals based on best available knowledge

How to communicate, use common language (move from recovery to preparation)

The presenters' slides are [here](#), [here](#), and [here](#).