GLISA
A NOAA RISA TEAM

Vulnerability Assessment Template for Great Lakes Cities

Overview

- **Purpose:** To co-develop a Vulnerability Assessment template that mainstreams the adaptation planning process by integrating climate-smart and equity-focused information into all types of city planning.

- **Partner:** Great Lakes Climate Adaptation Network (GLCAN), Huron River Watershed Council (HRWC), Headwaters Economics, Urban Sustainability Directors Network

- **People:** Practitioners from Ann Arbor and Dearborn (MI), Indianapolis (IN), Cleveland (OH), and Evanston (IL)

- **Impact:** The five pilot cities took immediate action by incorporating information from the assessment into existing city planning projects. The template has already been adapted to stormwater management with 12 cities and is being scaled-up to 60 cities in the Gulf of Mexico.

In 2017, the Great Lakes Integrated Sciences & Assessments (GLISA) partnered with the Great Lakes Climate Adaptation Network (GLCAN), the Huron River Watershed Council (HRWC), Headwaters Economics, and five Great Lakes cities (see "People," left) to co-develop a tool to help cities assess their vulnerability to climate change. With support from an Urban Sustainability Directors Network Innovation grant, the goal was to create a comprehensive Vulnerability Assessment (VA) template that could be used by cities across the region to consider climate and socioeconomic information as part of existing planning processes.

Through a collaborative process, GLISA, HRWC, and the cities actively engaged in a series of discussions, culminating in a 2-day workshop to decide what climate information to include, how to present it, and how to structure the assessment. The final version of the template provided each city with localized socioeconomic data, a summary of the observed climate changes, and projected impacts. This information was also displayed visually at the neighborhood-scale with the new Neighborhoods at Risk tool developed by Headwaters Economics to help cities identify vulnerable populations and infrastructure.

For GLCAN's member cities, the impacts of the VA template were immediate. Cleveland (OH) updated its city-wide Climate Action Plan using the information from the assessment. In Evanston (IL), City Sustainability Coordinator shared the template with the newly-formed Climate Action and Resilience Plan working group so it could deploy the template and launch its work. In community workshops, the working group then used the climate projections to steer dialogue about expected changes, how to prepare for them, and vulnerable physical, natural, and social infrastructure. In the working group's final report, it recommended specific actions to improve Evanston's resilience, such as targeted green infrastructure and planting shade trees to reduce temperatures.

Practitioners and the project team develop the VA template at a 2017 workshop in Ann Arbor (MI).

By design, the information included within the VA template is both specific to communities and easily digestible, and the template allows cities to self-identify specific projects or plans to assess. In Evanston's community climate planning meetings, staff noticed that participants, accustomed to hearing global or national projections, re-engaged with the process after they realized the temperature and precipitation data were specific to Evanston and their neighborhoods.

In Indianapolis, the Office of Sustainability Project Manager used the template differently. They drew on the climate projections in the VA to argue for incorporating a climate adaptation and resilience strategy into the development of the city's Sustainability Plan. The city also used the precipitation and temperature data to provide a rationale for adaptation decisions such as changing the size of the city's stormwater pipes— previously based on 1970s rain and flood data—or deciding which neighborhoods needed cooling centers for heat waves.

The long-term goal of the VA template is to mainstream the climate adaptation planning process by integrating climate-smart and equity-focused information into all types of city planning, including infrastructure, water management, and health. Adaptable to new locations and sectors, the template is intended to reduce costs for cities with constrained budgets and limited staff time. This has already been realized in 2018 and 2019, when GLISA and the same partners worked with 12 Great Lakes cities to adapt the template for stormwater management with funding from NOAA's Sectoral and Applications Research Program (SARP). And in 2020, GLISA launched a greatly expanded deployment of the template across more than 60 cities in the U.S. Gulf of Mexico region with funding from the National Academy of Sciences Gulf Research Program.

> " *[The Vulnerability Assessment template] really provided the information in a way that a lot of people were able to digest it, which was really helpful.* "
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> *– Kumar Jensen, Sustainability Coodinator, City of Evanston*

About GLISA   *Advancing Climate Knowledge for Adaptation and Resilience with Great Lakes Communities*

Established in 2010, GLISA is a collaboration between the University of Michigan and Michigan State University, supported by the National Oceanic and Atmospheric Administration (NOAA). As one of 11 NOAA Regional Integrated Sciences and Assessments (RISA) teams, GLISA works at the boundary between climate science and decision-makers, striving to enhance Great Lakes communities' capacity to understand, plan for, and respond to climate impacts now and in the future. Our team of social and physical scientists collaborates to:

- Develop usable climate information tailored to stakeholder needs;
- Develop, implement, and evaluate resources and tools to apply climate information to decision-making;
- Facilitate collaborative activities, education, and training and support stakeholder networks; and,
- Investigate emerging climate issues and synthesize findings for practitioners.

Climate Information → GLISA ⚭ GLCAN (Boundary Organization) ⚭ Cities → Information Users

Feedback

Example of GLISA's boundary chain model of stakeholder engagement for the Great Lakes Climate Adaptation Network (GLCAN). Climate information is tailored and moves through different boundary organizations (links in the chain) to connect science to users. Adapted from Lemos et al. 2014.