

EcoAdapt™
Meeting the challenges of climate change

An Overview of Adaptation Planning

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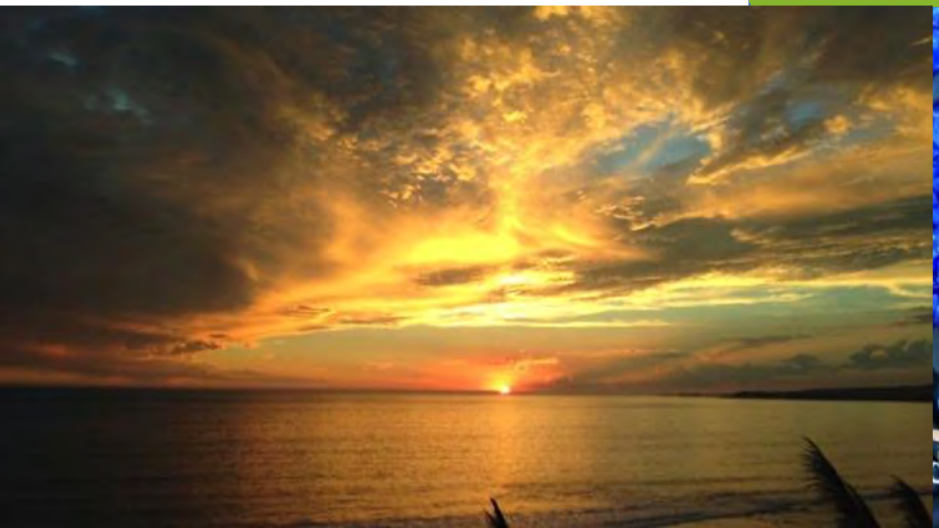
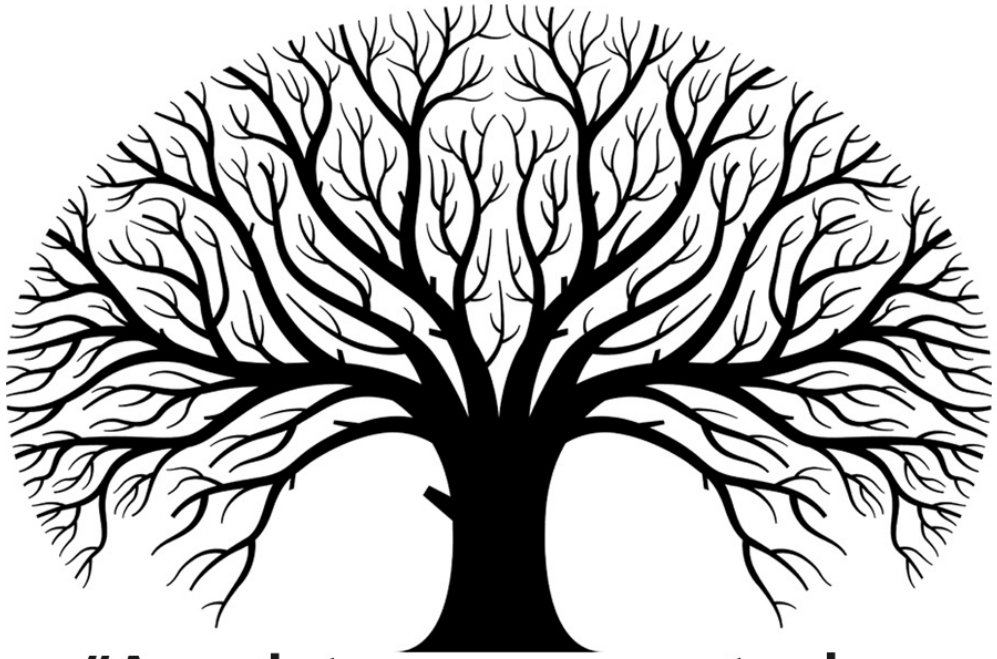


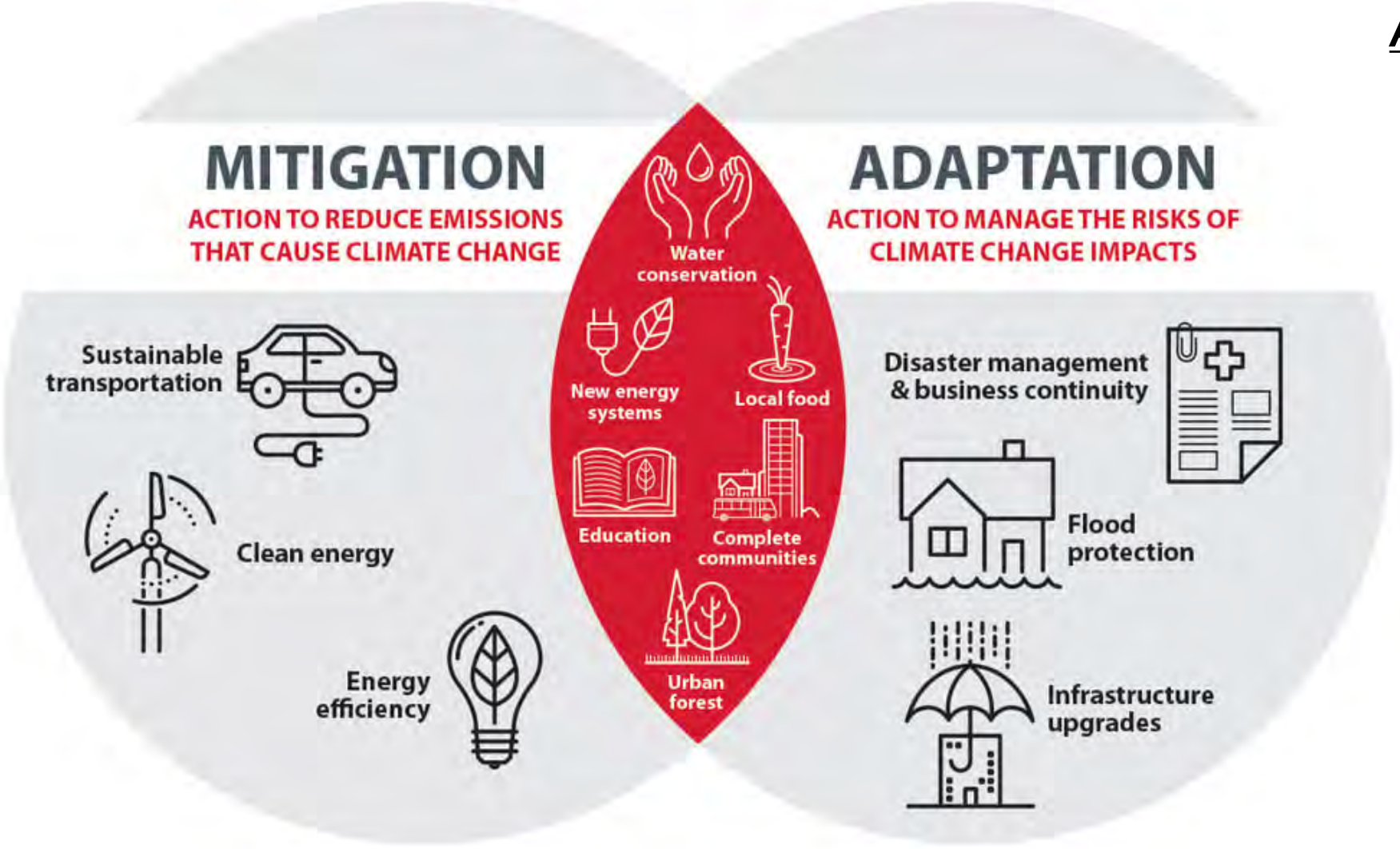
Key need to incorporate climate change into near-, medium-, *and* long-term planning

- **Minimize** risk of wasting time, money, and effort
- **Maximize** likelihood of success



"A society grows great when old men plant trees whose shade they know they shall never sit in." Greek Proverb

Responding to Climate Change



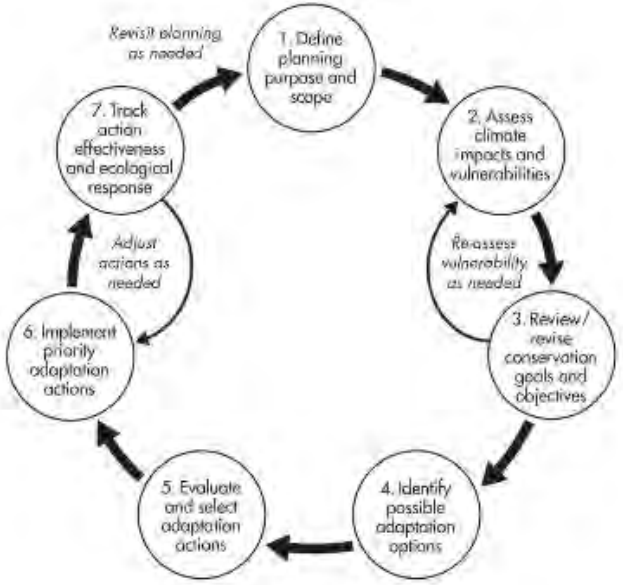
Adaptation is how we prepare for, respond to, and recover from the changes that we are already experiencing/ expected to experience.

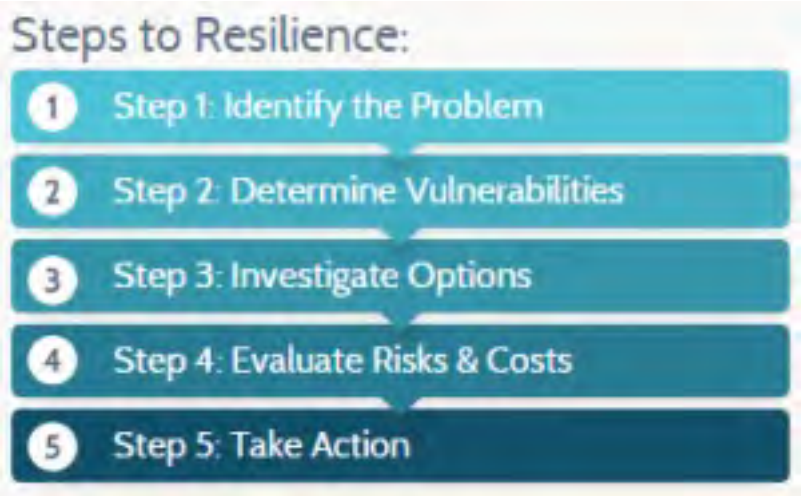
- ✓ Addresses the impacts of climate change with a focus on managing change

Mitigation is what we do to decrease the potential of climate change itself.

- ✓ Addresses the causes with a focus on reducing greenhouse gas emissions

Many Adaptation Planning Processes





Many Adaptation Planning Processes

Adaptation Ladder of Engagement®

- Processes generally consist of same steps
- Participatory and iterative
- Generate place-based adaptation strategies

No right or wrong way – the most important thing is to get started!

Adaptation Planning Process

California Adaptation Planning Guide 2020

Adaptation Planning Process: Phase 1

PHASE 1. Project Scoping

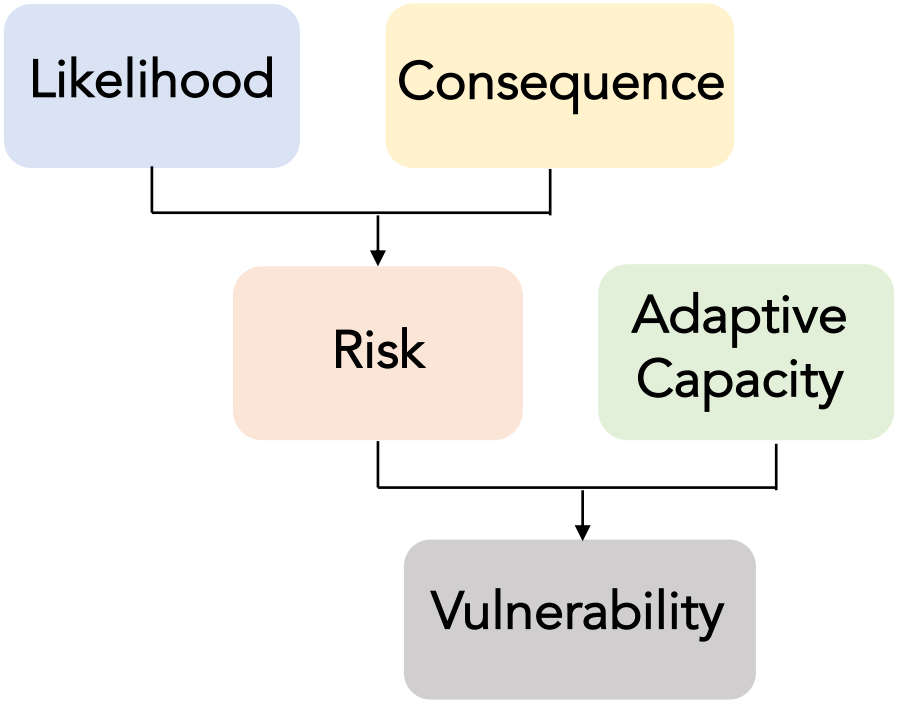
- Identify goals, desired outcomes of process
- Set geographic boundaries and timeframe
  - Near (e.g., length of a plan: 10-20 years)
  - Mid (25-50 years)
  - Long (e.g., lifespan of infrastructure: 50-100 years)
- Identify key stakeholders
- Identify key pre-existing conditions and climate stressors
- Identify important community assets

Adaptation Planning Process: Phase 2

Vulnerability =

The degree to which natural, built, and human systems are susceptible to harm

Adaptation Planning Process: Phase 2



Vulnerability =

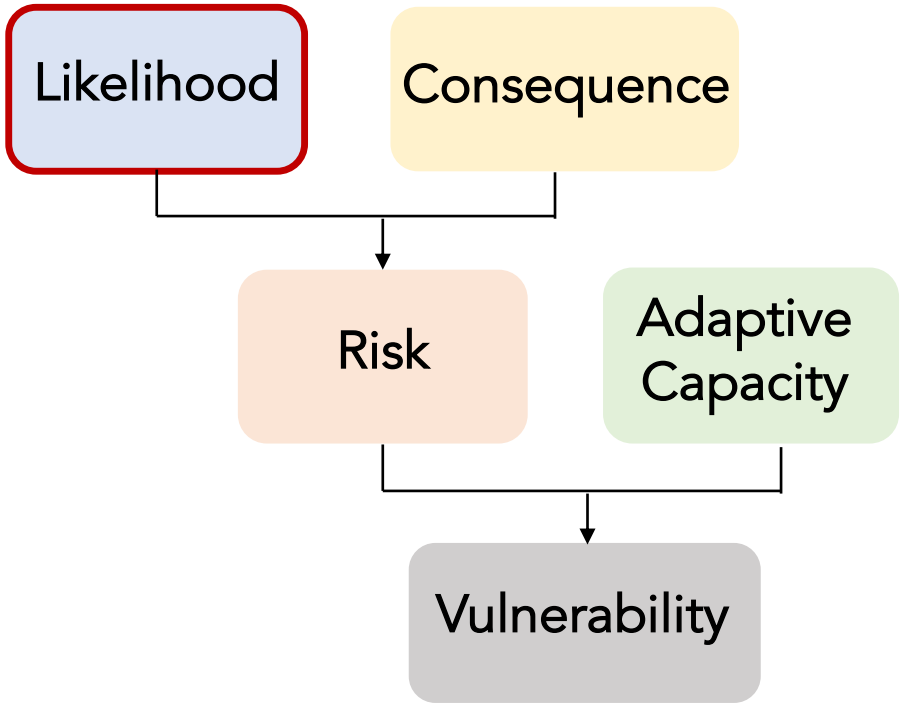
The degree to which natural, built, and human systems are susceptible to harm

A function of the likelihood of ***exposure*** *to climate changes,* ***the consequence of those*** *changes, and the* ***capacity to adapt*** *to changes*

Why Assess Vulnerability?

- Identify **what** is most vulnerable (e.g., people, places, assets, elements) and **why**
- Helps you to develop a range of adaptation responses

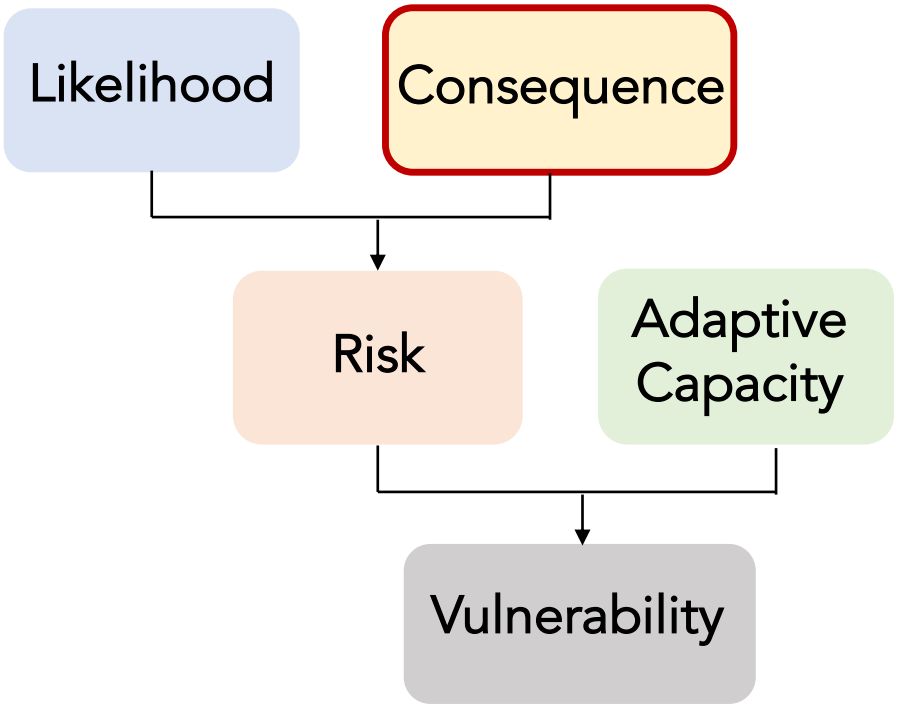
Vulnerability Assessments: Likelihood



Likelihood:

Degree to which an element or asset is exposed to significant changes in climate (i.e. how likely is it that an asset will be exposed to a given climate hazard?)

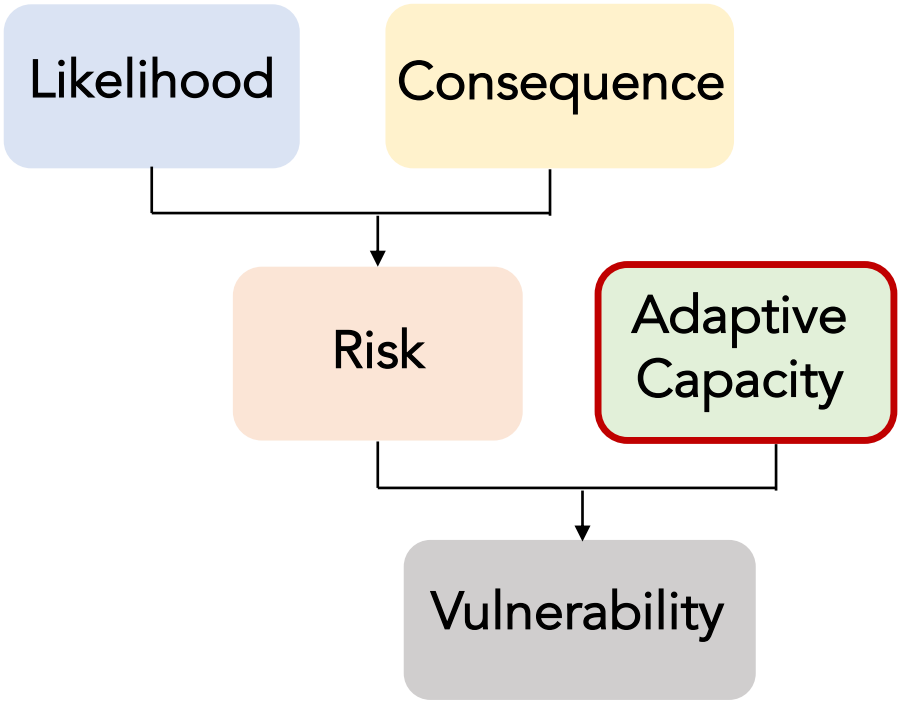
Vulnerability Assessments: Consequence



Consequence:

Degree to which an element or asset is affected by exposure to a changing climate (i.e. how significant is the effect of the climate impact?)

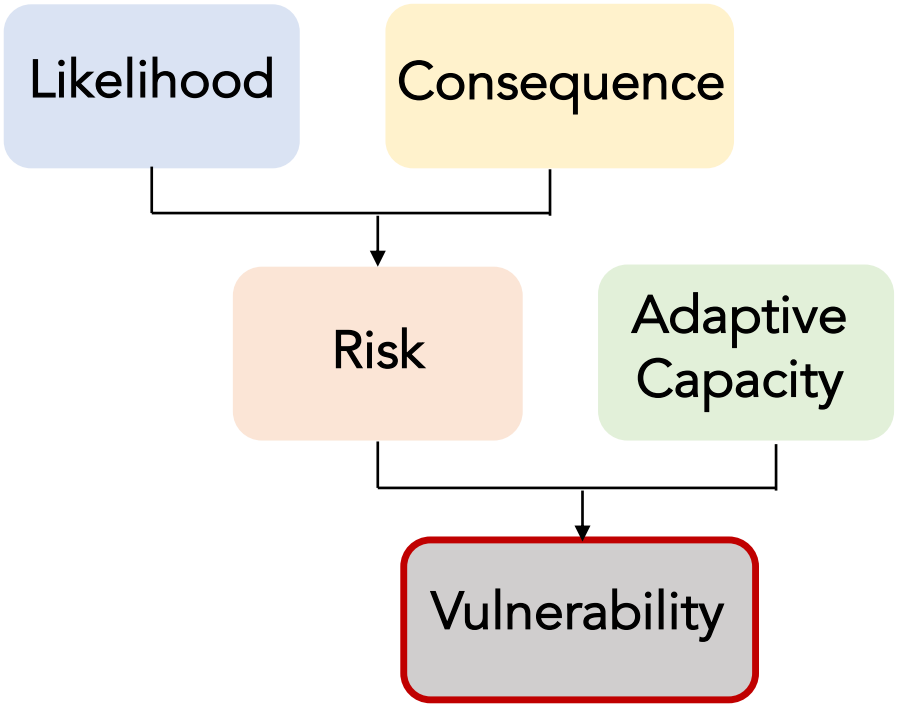
Vulnerability Assessments: Adaptive Capacity



Adaptive Capacity:

The ability to adjust to climate change to moderate potential damages, take advantage of opportunities, or cope with consequences

Vulnerability Assessments: Adaptive Capacity



Vulnerability:

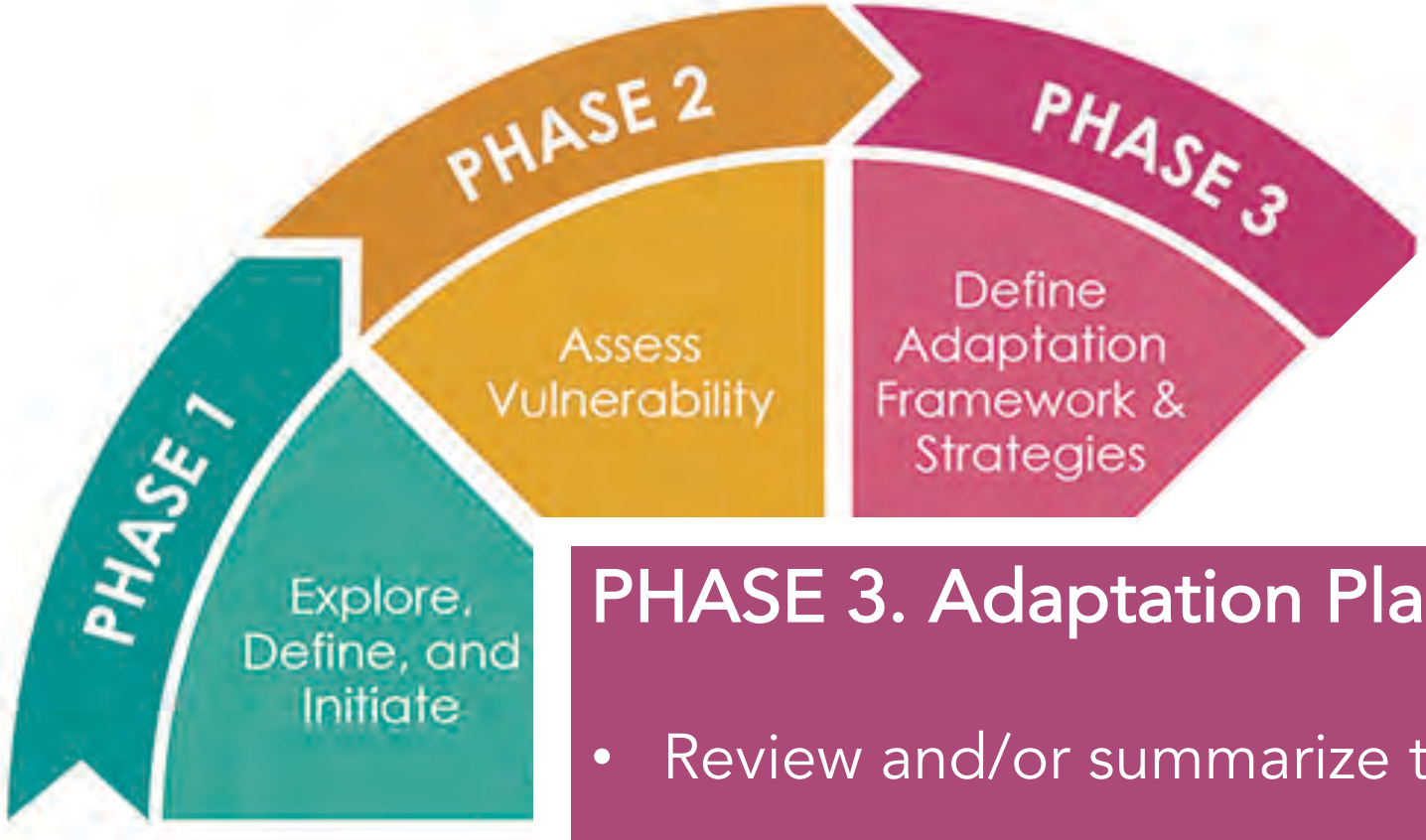
The degree to which an element or asset is susceptible to harm

Adaptation Planning Process: Phase 2

PHASE 2. Assess Vulnerability

- Identify current and projected future changes in climate factors/hazards (Likelihood)
- Identify impacts of climate change on community elements (Consequence)
- Characterize the current ability to moderate or cope with impacts (Adaptive Capacity)

Adaptation Planning Process: Phase 3



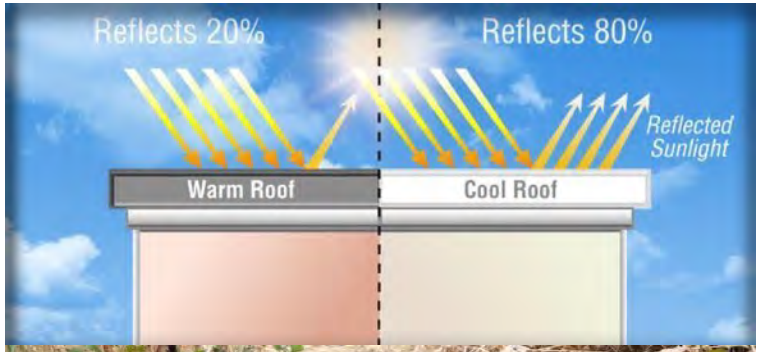
PHASE 3. Adaptation Planning

- Review and/or summarize the major climate vulnerabilities
- Identify adaptation strategies that reduce vulnerabilities and/or increase resilience
- Prioritize adaptation strategies

Adaptation Strategies

- Aim to reduce the negative effects or take advantage of the opportunities provided by climate change

- General types:
  - Programmatic
  - Plans, regulations, policies
  - Capital improvement/infrastructure projects
  - Coordination/collaboration
  - Knowledge/evaluation

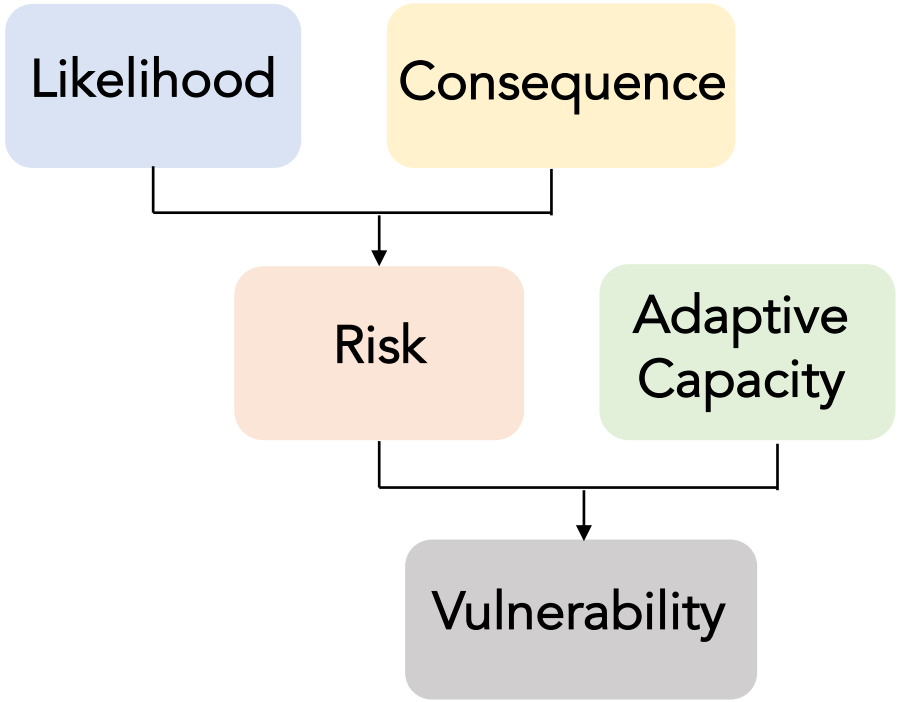


Using Vulnerability Results in Adaptation Planning

↓ Likelihood

↓ Consequence

↑ Adaptive Capacity



Using Vulnerability Results in Adaptation Planning

Impact: Extreme storm/precipitation events are likely to lead to flooding of developed areas and infrastructure

↓ Likelihood (limit change)

- Reduce stormwater runoff within residential neighborhoods that flood frequently

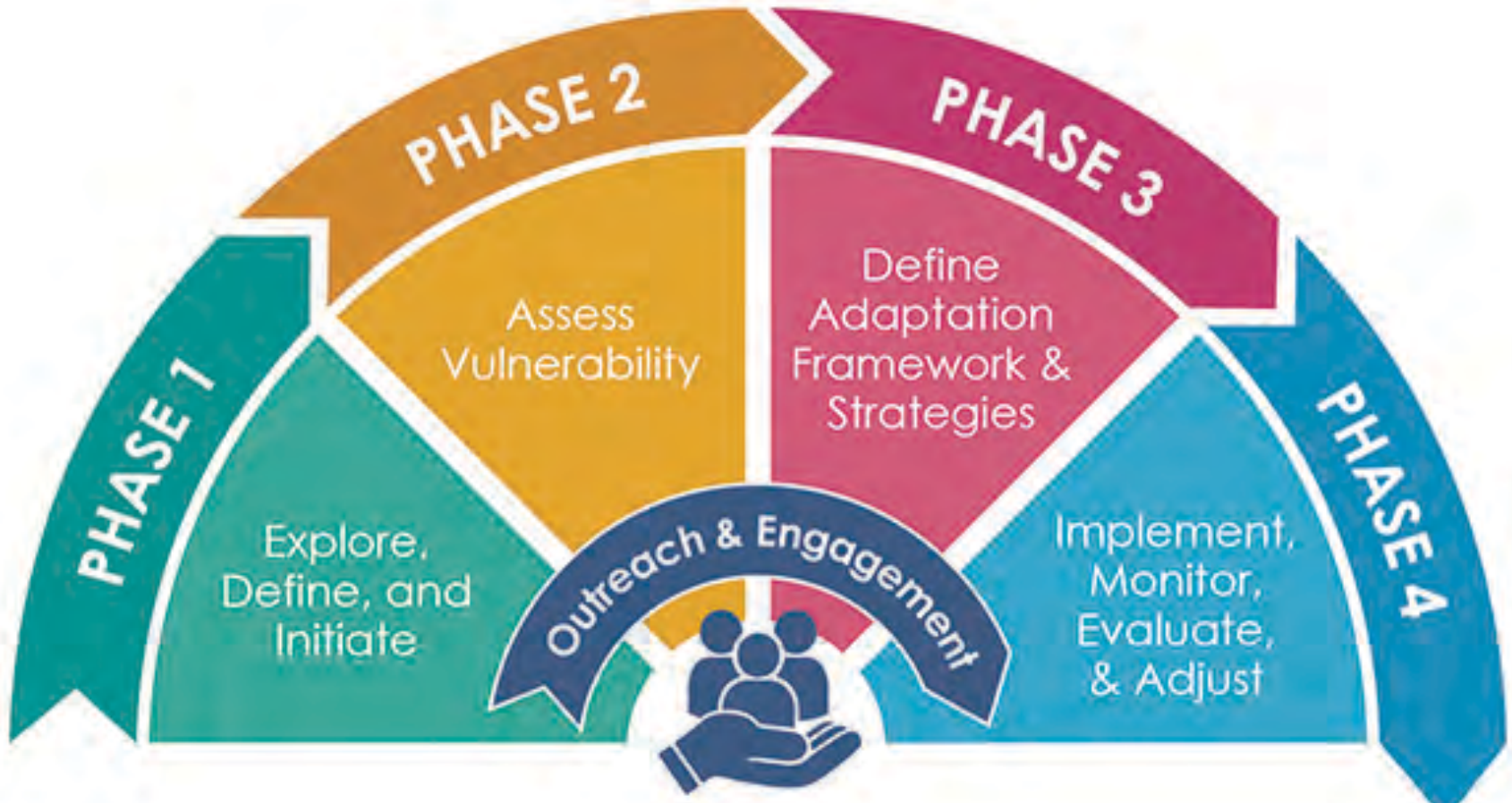
↓ Consequence (minimize effects)

- Site outside the floodplain

↑ Adaptive Capacity (improve ability to cope w/change)

- Upgrade wastewater systems

Adaptation Planning Process: Phase 4



PHASE 4. Implement, Monitor, Evaluate

- Put adaptation strategies into action
- Create a monitoring program to track implementation
- Evaluate strategies to determine what is/is not working and adjust, as needed

Examples?

Case Study #1: Waterbury, VT

Case Study #2: Louisville, KY

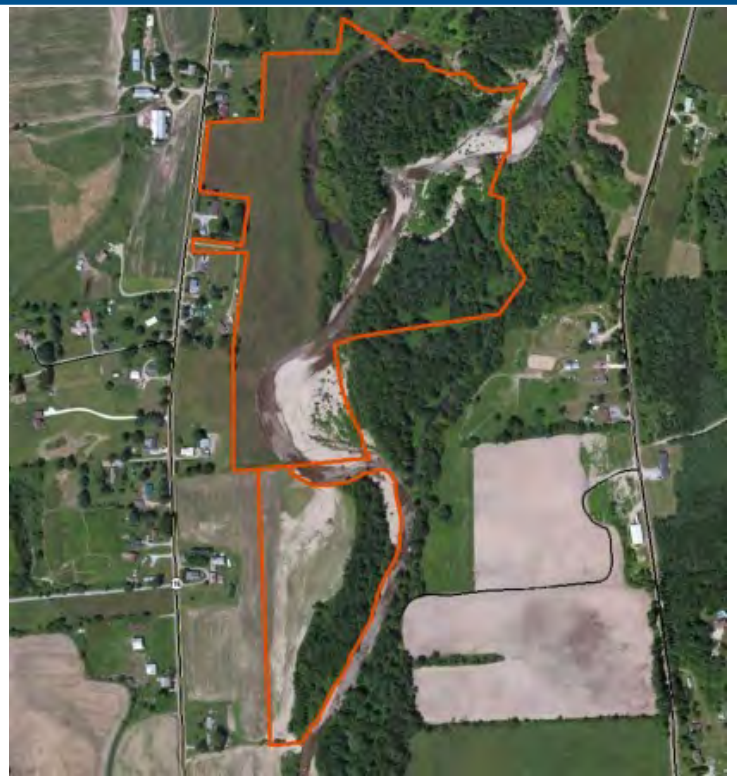
Case Study #3: Illinois

Case Study #1: Waterbury, VT

Flood Risk, Extreme Events

TROPICAL STORM IRENE 2011

Case Study #1: Waterbury, VT



Adaptation Strategies

- Created a Flood Inundation Mapper to **identify areas exposed to damage** during real-time flooding to aid emergency responses
- Created home elevation and ground floor/basement fill-in **pilot projects** to elevate homes in 100-year floodplain
- **Inventoried bridges and culverts** to evaluate how structure could fail
- Established a Property Acquisition Program to **target land conservation for flood resilience**

Case Study #2: Louisville, KY

High-Intensity Rainfall Events and Flooding

Case Study #2: Louisville, KY

University also created Climate Action Plan, which identifies over 175 options for reducing emissions + enhancing adaptation

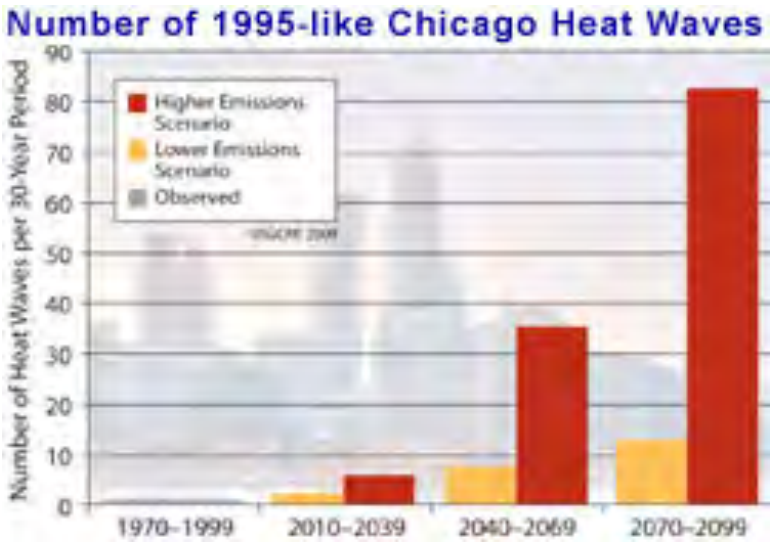
Plant native, deep-rooted species to enhance carbon sequestration and help manage stormwater

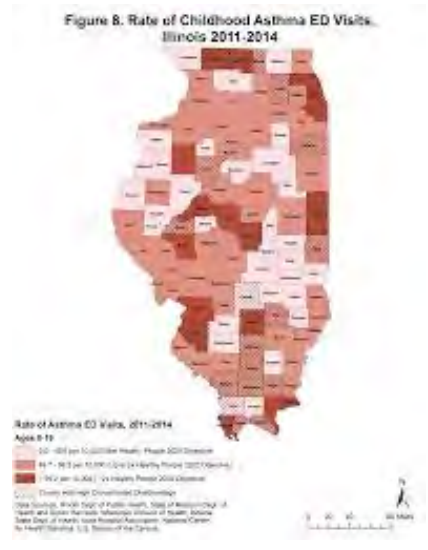
Adaptation Strategies

- Tested the effectiveness of green infrastructure in reducing stormwater runoff through 19 **demonstration projects**
- **Updated Green Infrastructure Design Manual** based on lessons learned from demonstration projects
- University of Louisville **installed underground infiltration chambers, cisterns, rain barrels, and permeable pavers** to limit stormwater delivery

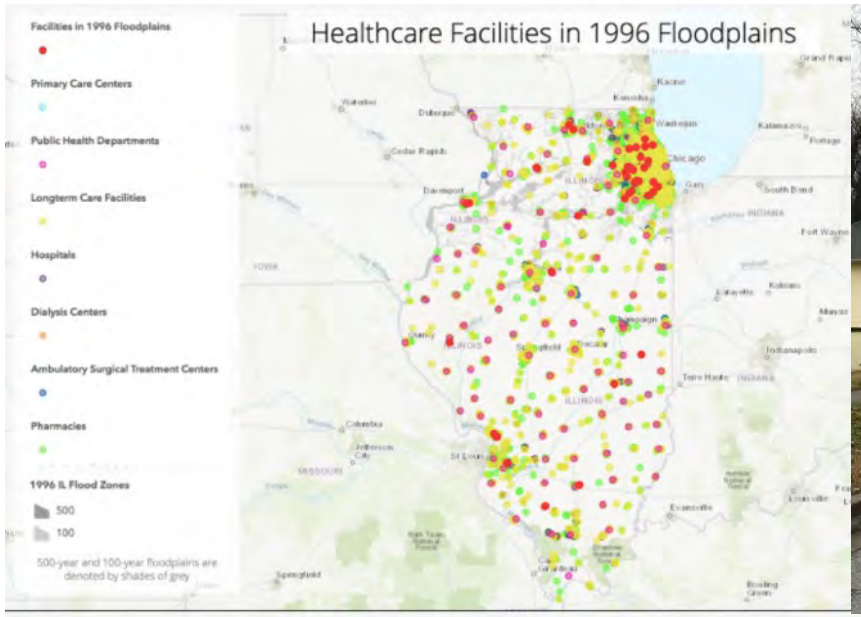
https://louisvillemsd.org/sites/default/files/inline-files/Chapter18_GreenInfrastructureDesignManual_Rev062016_0.pdf

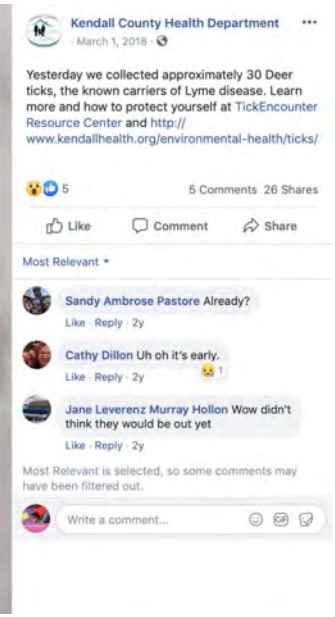
Case Study #3: Illinois



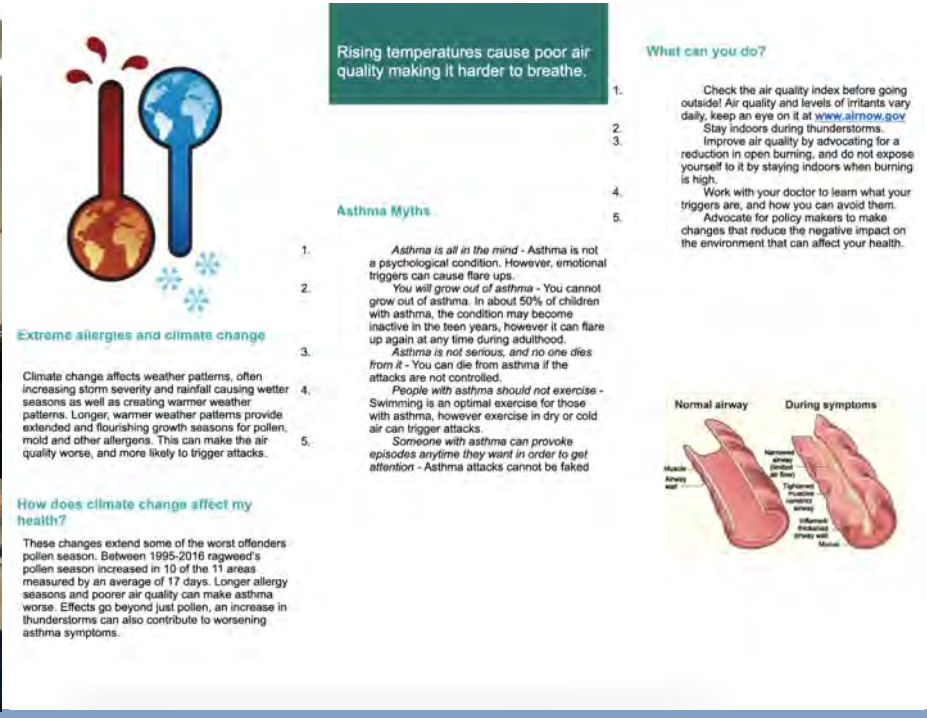


Heat Waves, Drought, Flooding





Case Study #3: Illinois

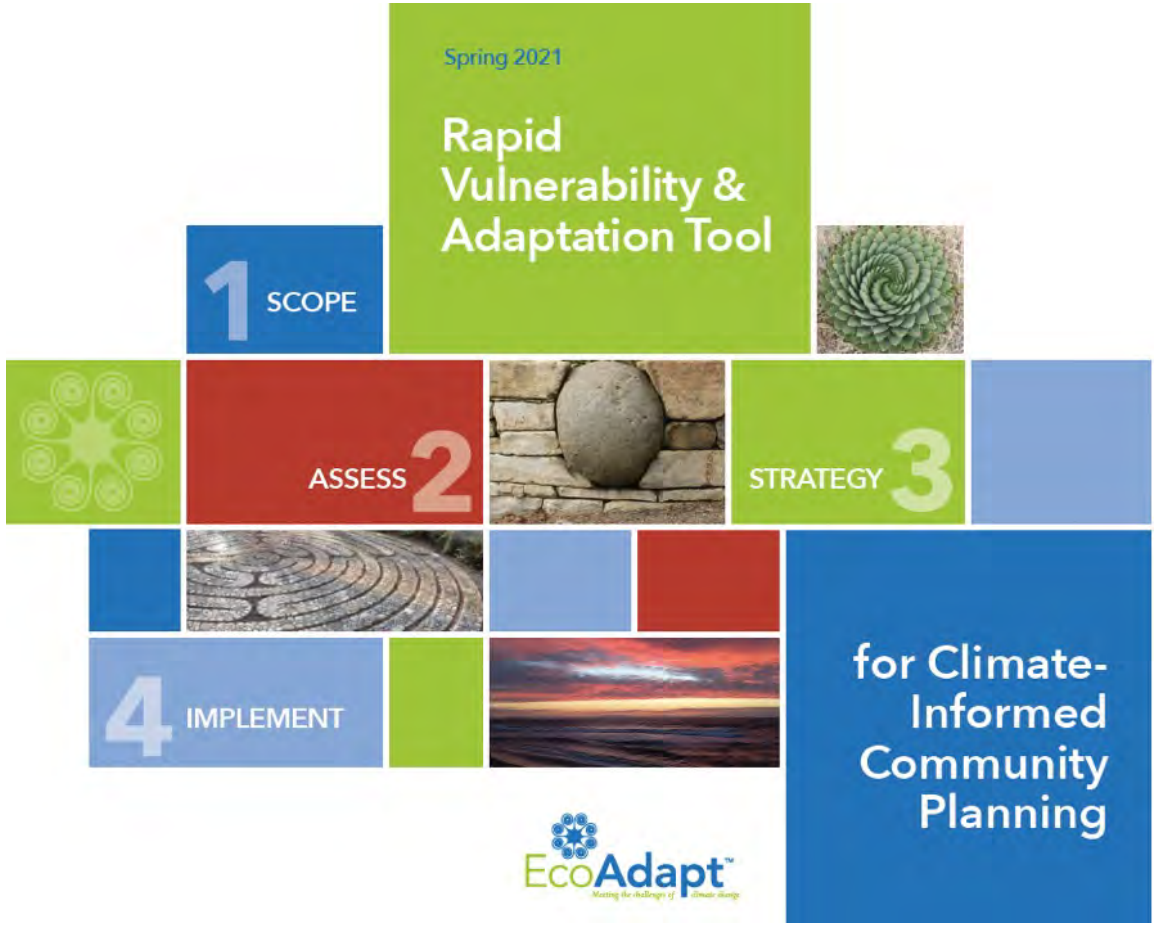


Adaptation Strategies

- Created an **online heat toolkit** for local health departments
- Developed an online **flood mapping toolkit** for emergency preparedness professionals
- **Targeted education opportunities** for healthcare workers so they are better prepared to address health effects of climate change
- Established **a mini grant program** for local health departments to build their capacity to address the public health effects of climate change

https://braceillinois.uic.edu/take-action-2/take-action/

Tools Used in this Workshop



Use to assess vulnerability across the community and its many sectors and develop adaptation responses

Use to assess the climate readiness of any project or policy

Questions?

Building a Climate Savvy Community

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