



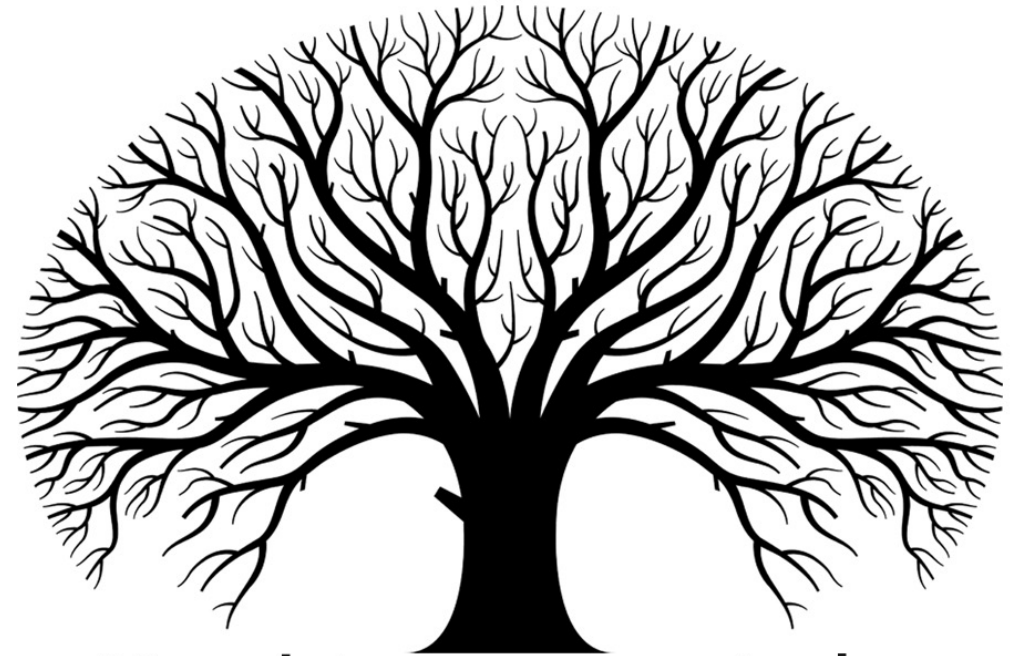
An Overview of Adaptation Planning

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

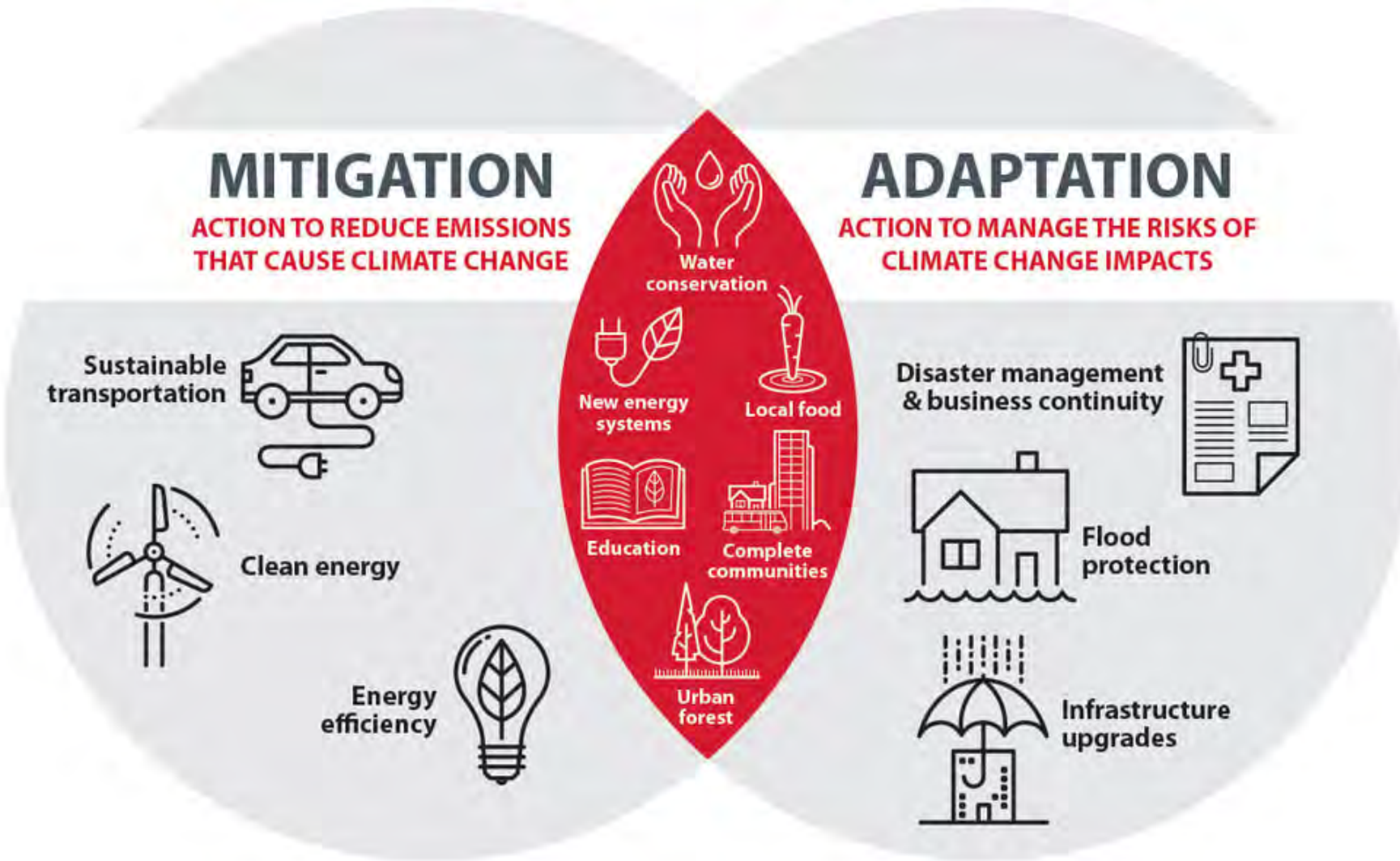
- Minimize risk of wasting time, money, and effort
- Maximize likelihood of success



"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

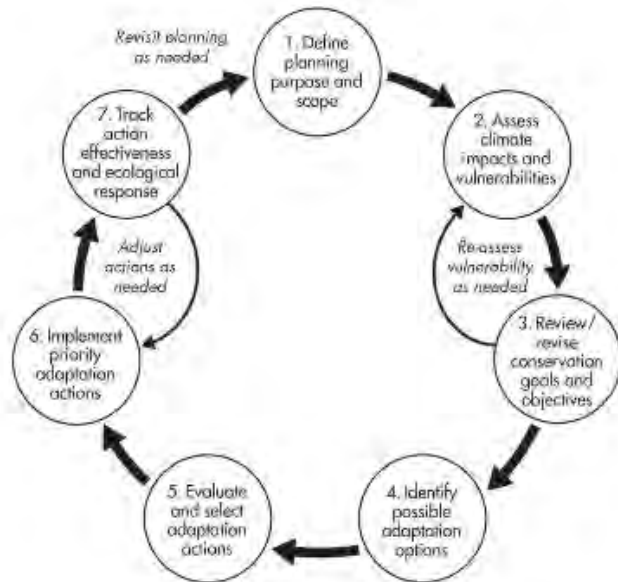
Mitigation is what we do to decrease the potential of climate change itself.

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

Many Adaptation Planning Processes



Adaptation Ladder of Engagement®



Steps to Resilience:

- 1 Step 1: Identify the Problem
- 2 Step 2: Determine Vulnerabilities
- 3 Step 3: Investigate Options
- 4 Step 4: Evaluate Risks & Costs
- 5 Step 5: Take Action

Many Adaptation Planning Processes



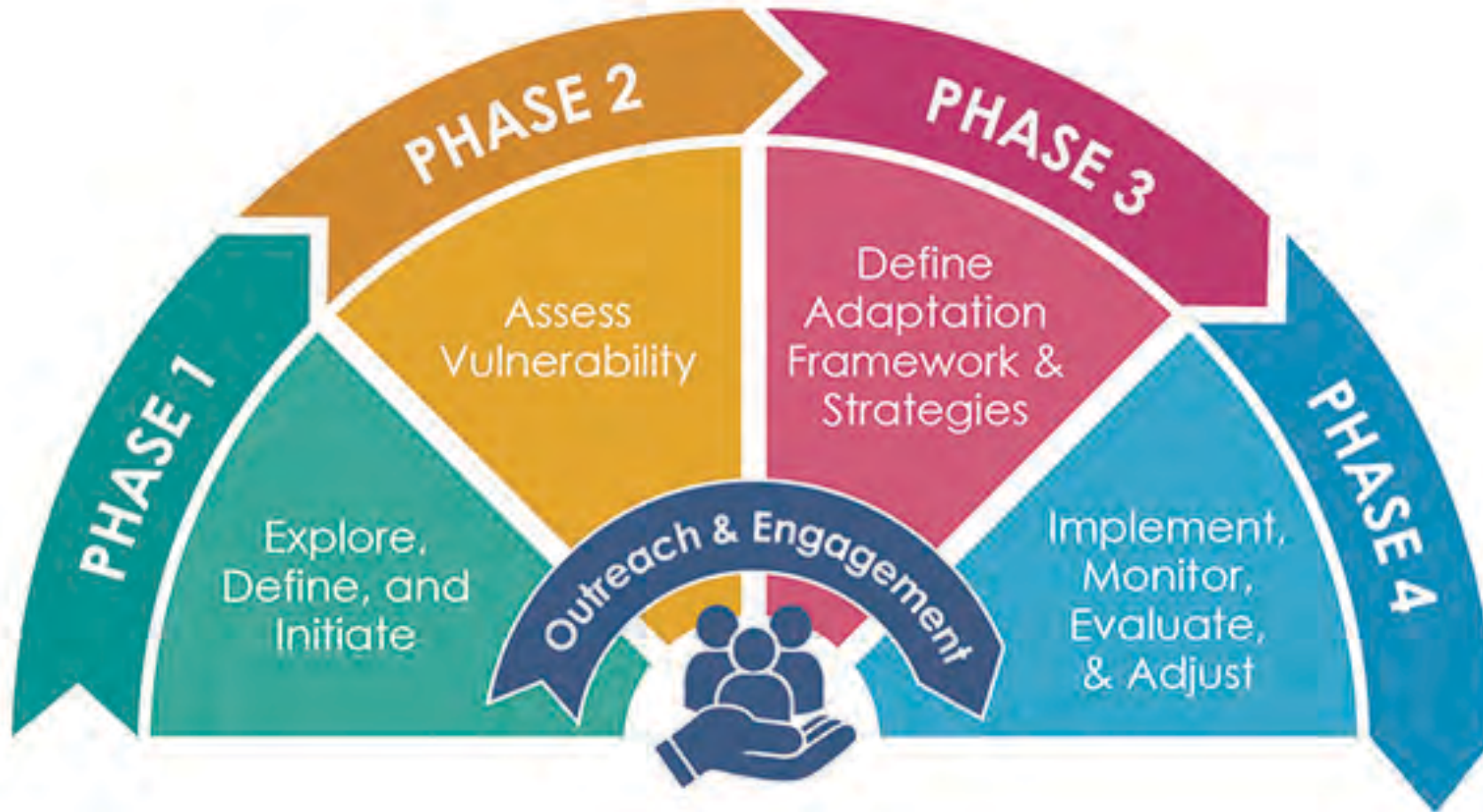
Adaptation Ladder of Engagement®

- 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





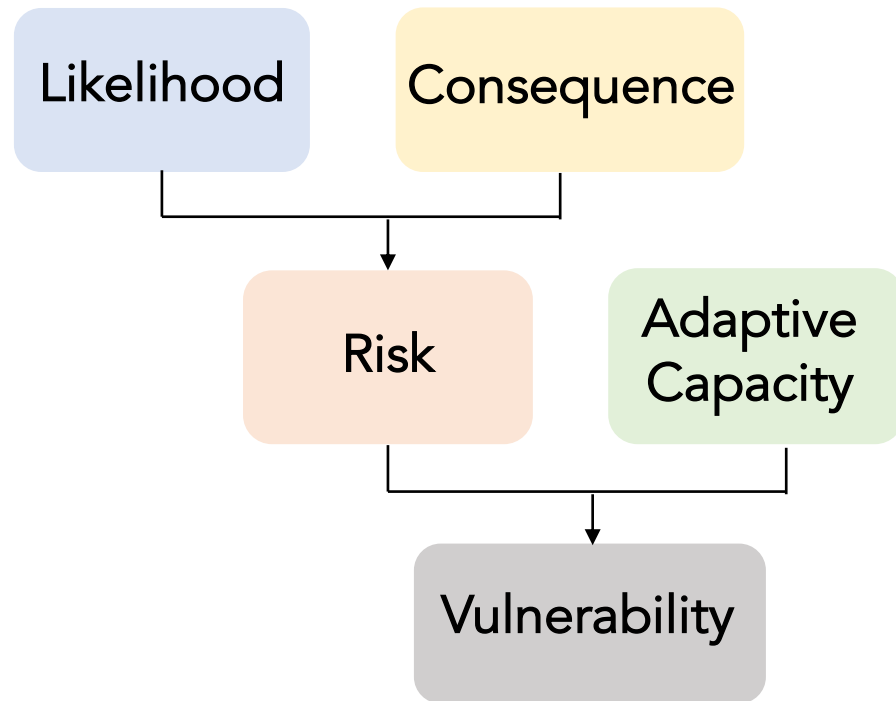
PHASE 1. Project Scoping

- 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



Vulnerability =

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



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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

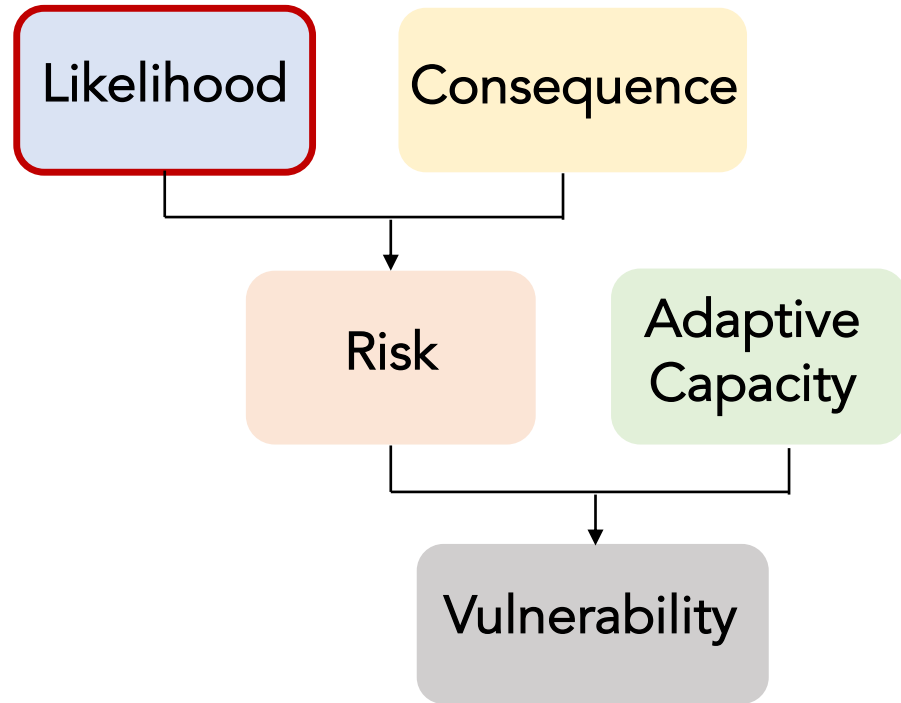
Why Assess Vulnerability?



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



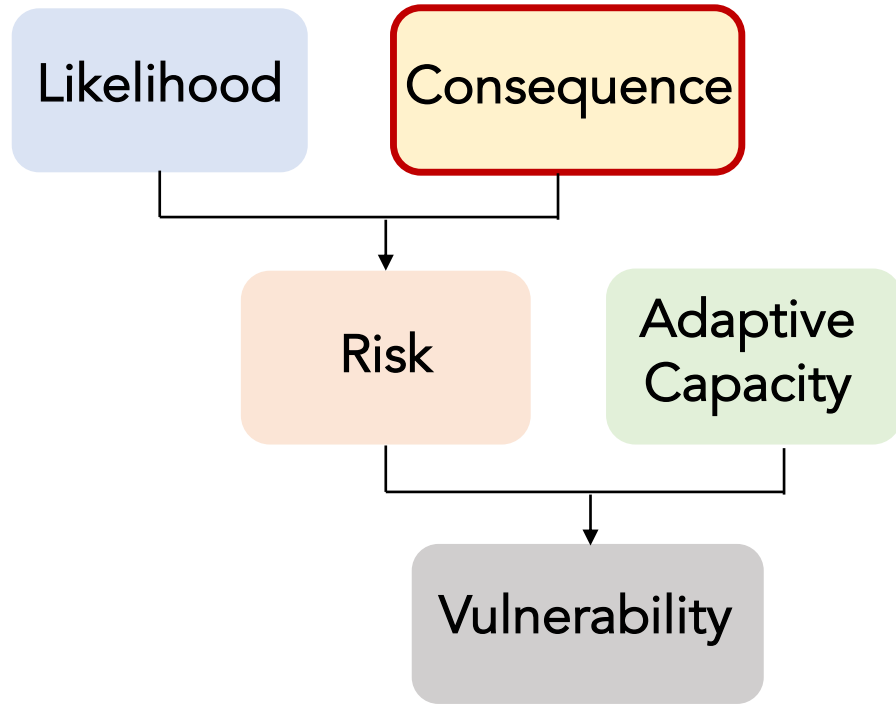
Vulnerability Assessments: Likelihood



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?)

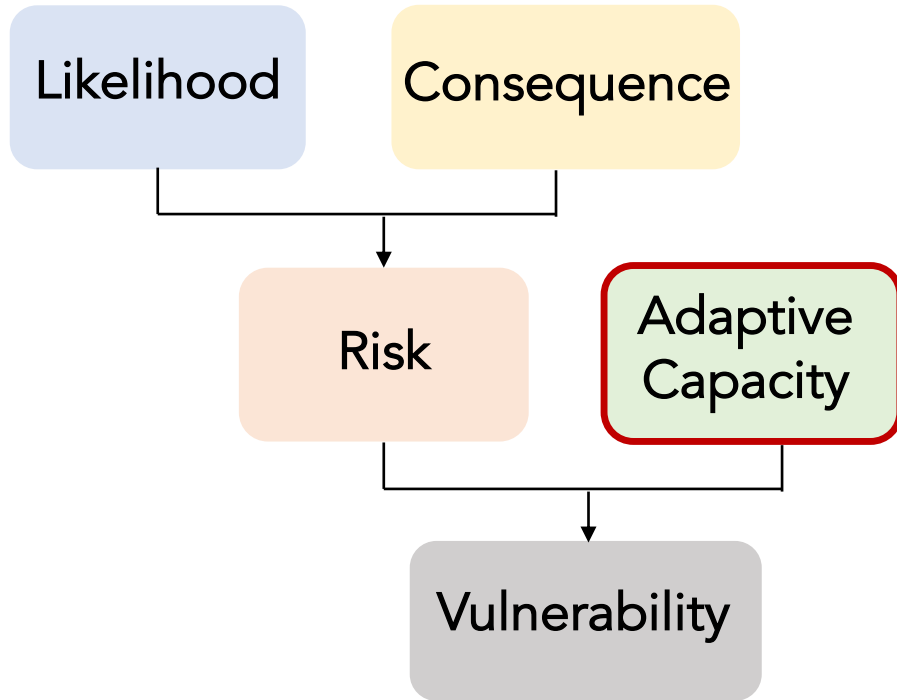
Vulnerability Assessments: Consequence



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?)

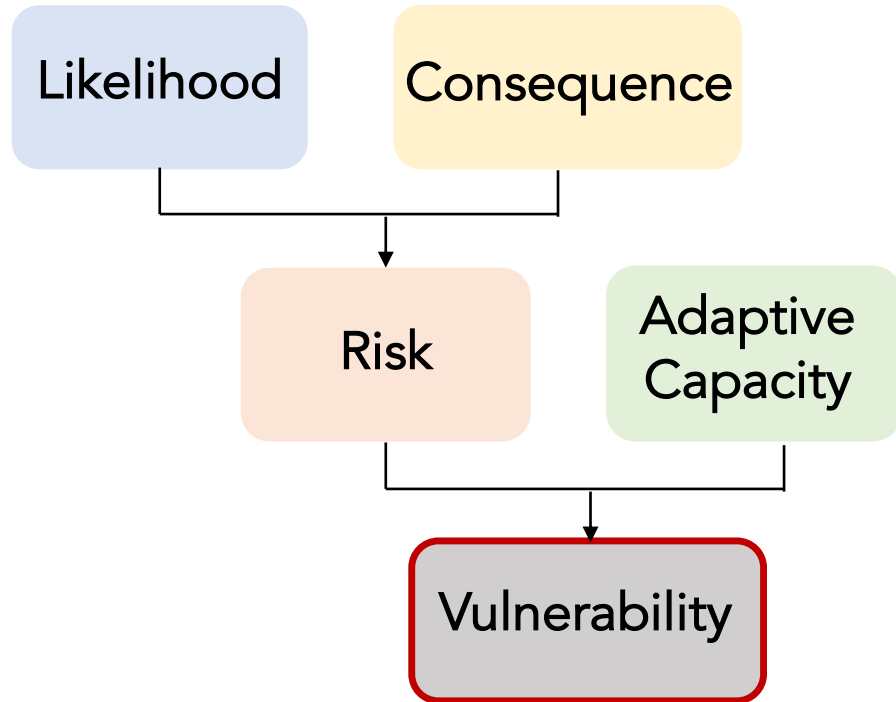
Vulnerability Assessments: Adaptive Capacity



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



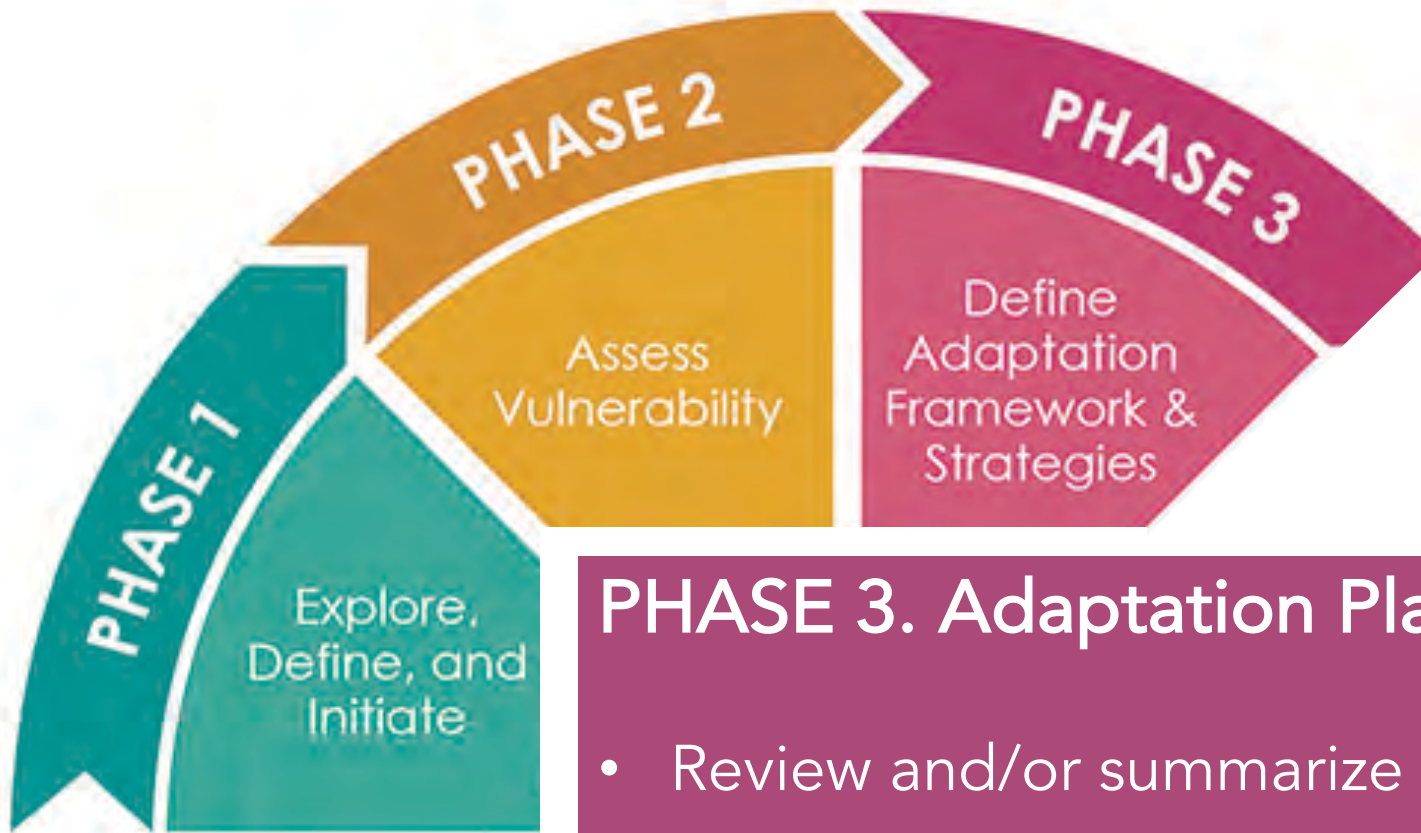
Vulnerability:

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



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)



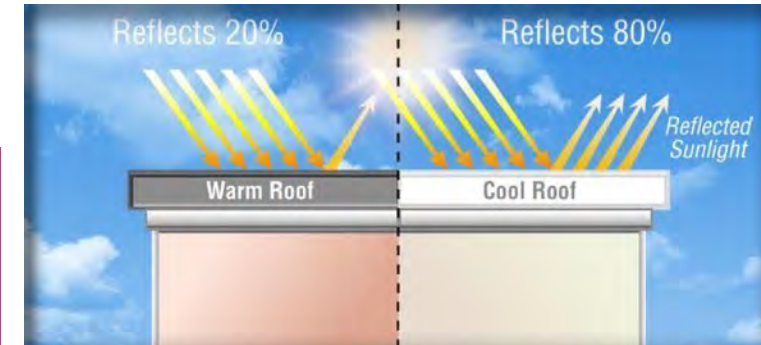
PHASE 3. Adaptation Planning

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

Adaptation Strategies



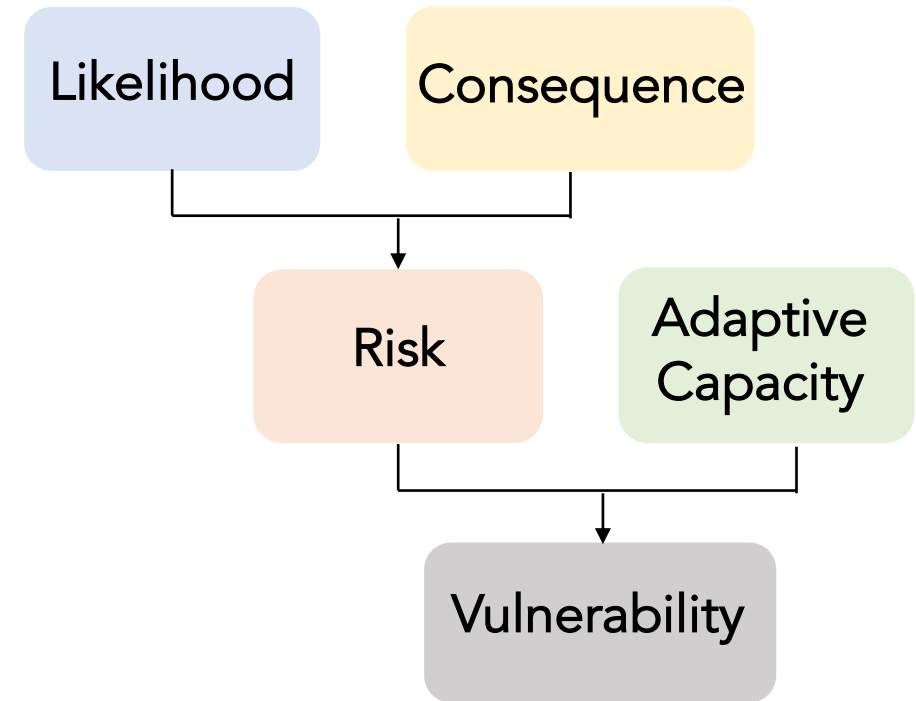
- Aim to reduce the negative effects or take advantage of the opportunities provided by climate change
- General types:
 - Programmatic
 - Plans, regulations, policies
 - Capital improvement/infrastructure projects
 - Coordination/collaboration
 - Knowledge/evaluation



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



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

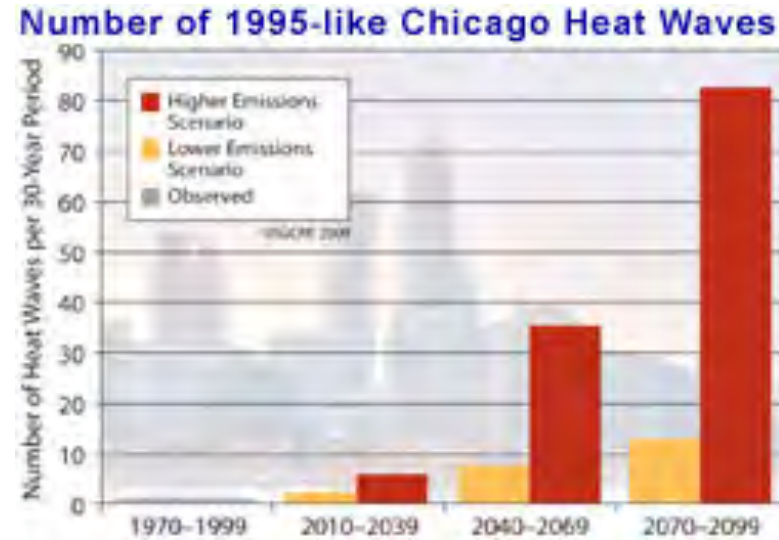
https://louisvillemisd.org/sites/default/files/inline-files/Chapter18_GreenInfrastructureDesignManual_Rev062016_0.pdf



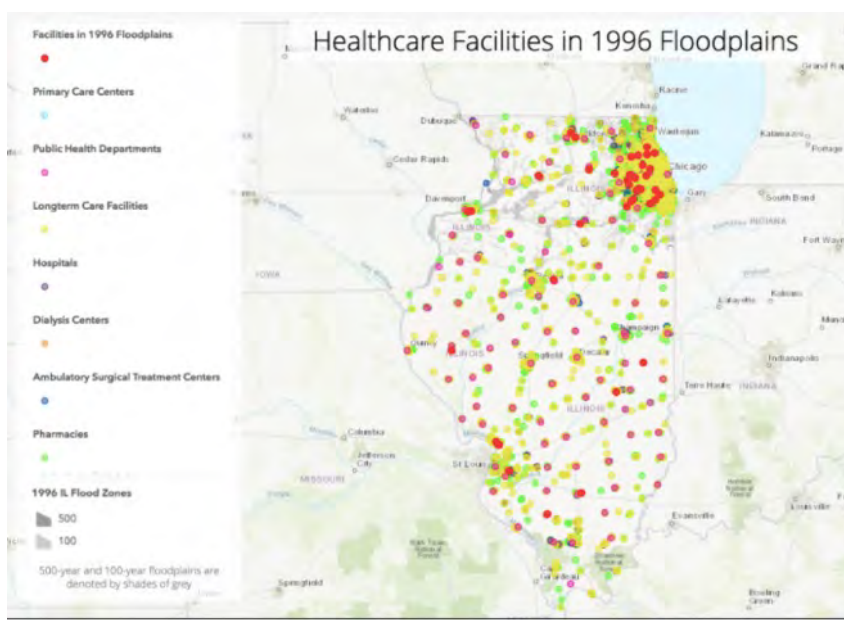
University also created Climate Action Plan, which identifies over 175 options for reducing emissions + enhancing adaptation

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

Case Study #3: Illinois



↑ Heat Waves, Drought, Flooding



Kendall County Health Department
March 1, 2018

Yesterday we collected approximately 30 Deer ticks, the known carriers of Lyme disease. Learn more and how to protect yourself at TickEncounter Resource Center and <http://www.kendallhealth.org/environmental-health/ticks/>

5 Comments 26 Shares

Like Comment Share


Most Relevant

- Sandy Ambrose Pastore Already? Like Reply 2y
- Cathy Dillon Uh oh it's early. Like Reply 2y
- Jane Leverenz Murray Hollon Wow didn't think they would be out yet Like Reply 2y

Most Relevant is selected, so some comments may have been filtered out.

Write a comment...

Case Study #3: Illinois



Rising temperatures cause poor air quality making it harder to breathe.

Extreme allergies and climate change

Climate change affects weather patterns, often increasing storm severity and rainfall causing wetter seasons as well as creating warmer weather patterns. Longer, warmer weather patterns provide extended and flourishing growth seasons for pollen, mold and other allergens. This can make the air quality worse, and more likely to trigger attacks.

How does climate change affect my health?


These changes extend some of the worst offenders pollen season. Between 1995-2016 ragweed's pollen season increased in 10 of the 11 areas measured by an average of 17 days. Longer allergy seasons and poorer air quality can make asthma worse. Effects go beyond just pollen, an increase in thunderstorms can also contribute to worsening asthma symptoms.

Asthma Myths

1. *Asthma is all in the mind* - Asthma is not a psychological condition. However, emotional triggers can cause flare ups.
2. *You will grow out of asthma* - You cannot grow out of asthma. In about 50% of children with asthma, the condition may become inactive in the teen years, however it can flare up again at any time during adulthood.
3. *Asthma is not serious, and no one dies from it* - You can die from asthma if the attacks are not controlled.
4. *People with asthma should not exercise* - Swimming is an optimal exercise for those with asthma, however exercise in dry or cold air can trigger attacks.
5. *Someone with asthma can provoke episodes anytime they want in order to get attention* - Asthma attacks cannot be faked

What can you do?

1. Check the air quality index before going outside! Air quality and levels of irritants vary daily, keep an eye on it at www.airnow.gov
2. Stay indoors during thunderstorms.
3. Improve air quality by advocating for a reduction in open burning, and do not expose yourself to it by staying indoors when burning is high.
4. Work with your doctor to learn what your triggers are, and how you can avoid them.
5. Advocate for policy makers to make changes that reduce the negative impact on the environment that can affect your health.

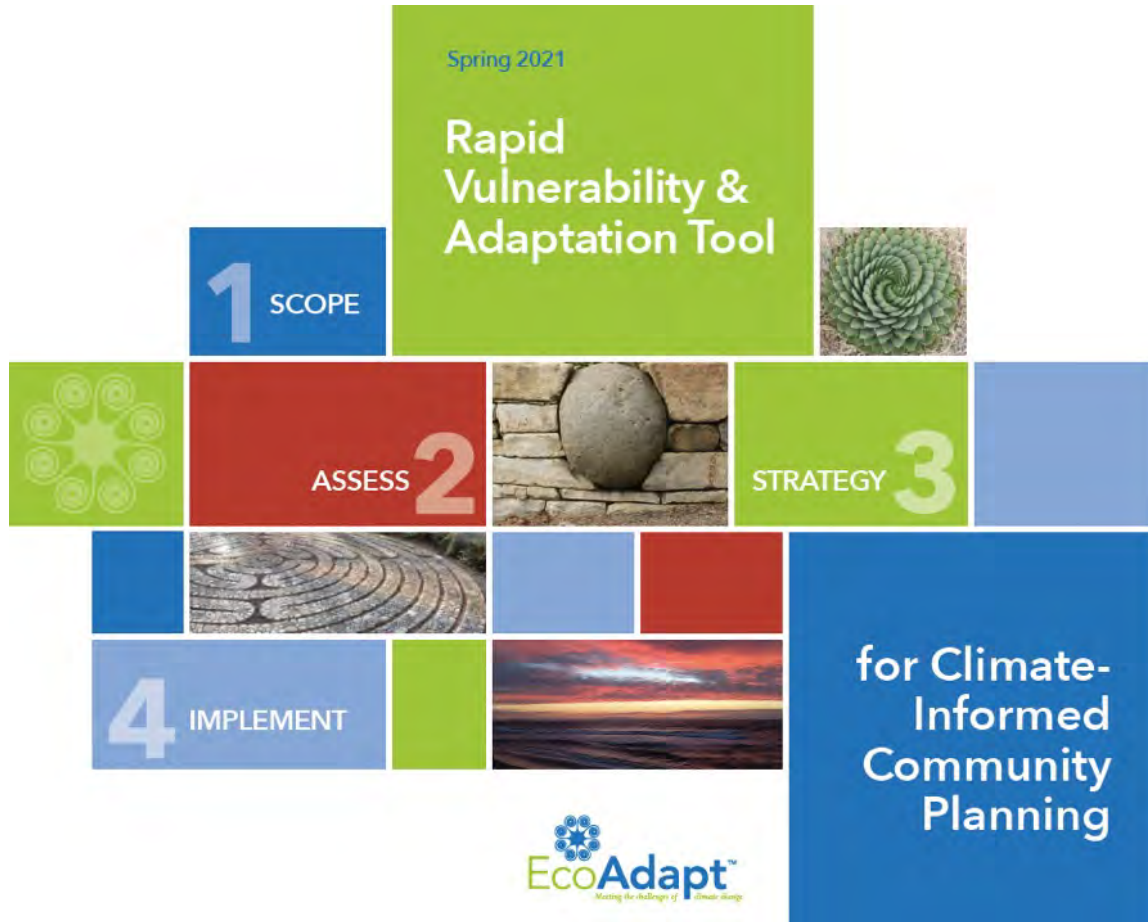


Adaptation Strategies

- 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



Building a Climate Savvy Community



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