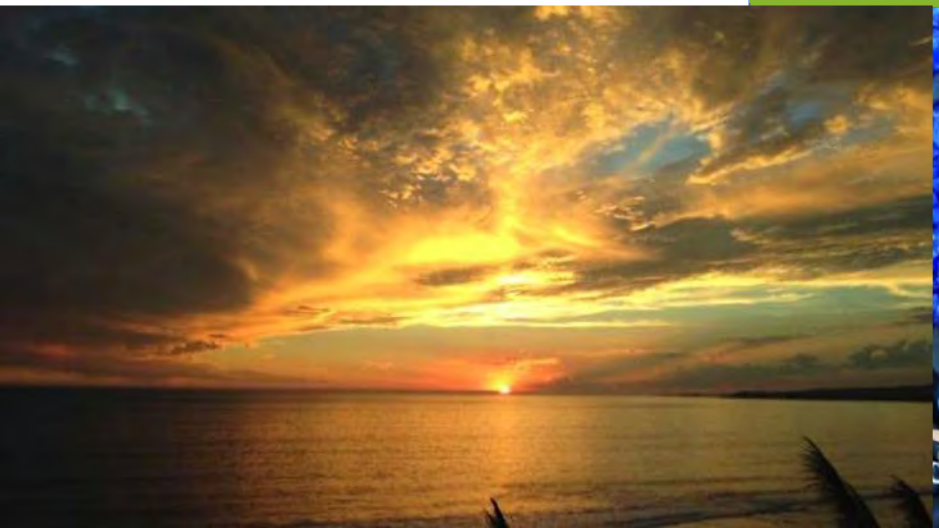


EcoAdapt™
Meeting the challenges of climate change

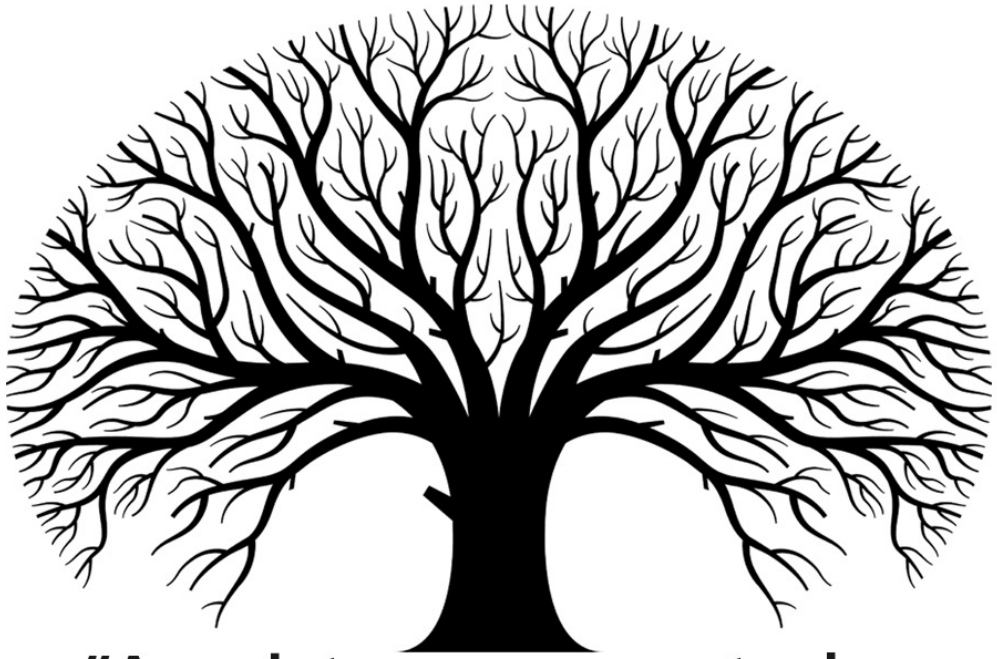
An Overview of Adaptation Planning

Eric Mielbrecht



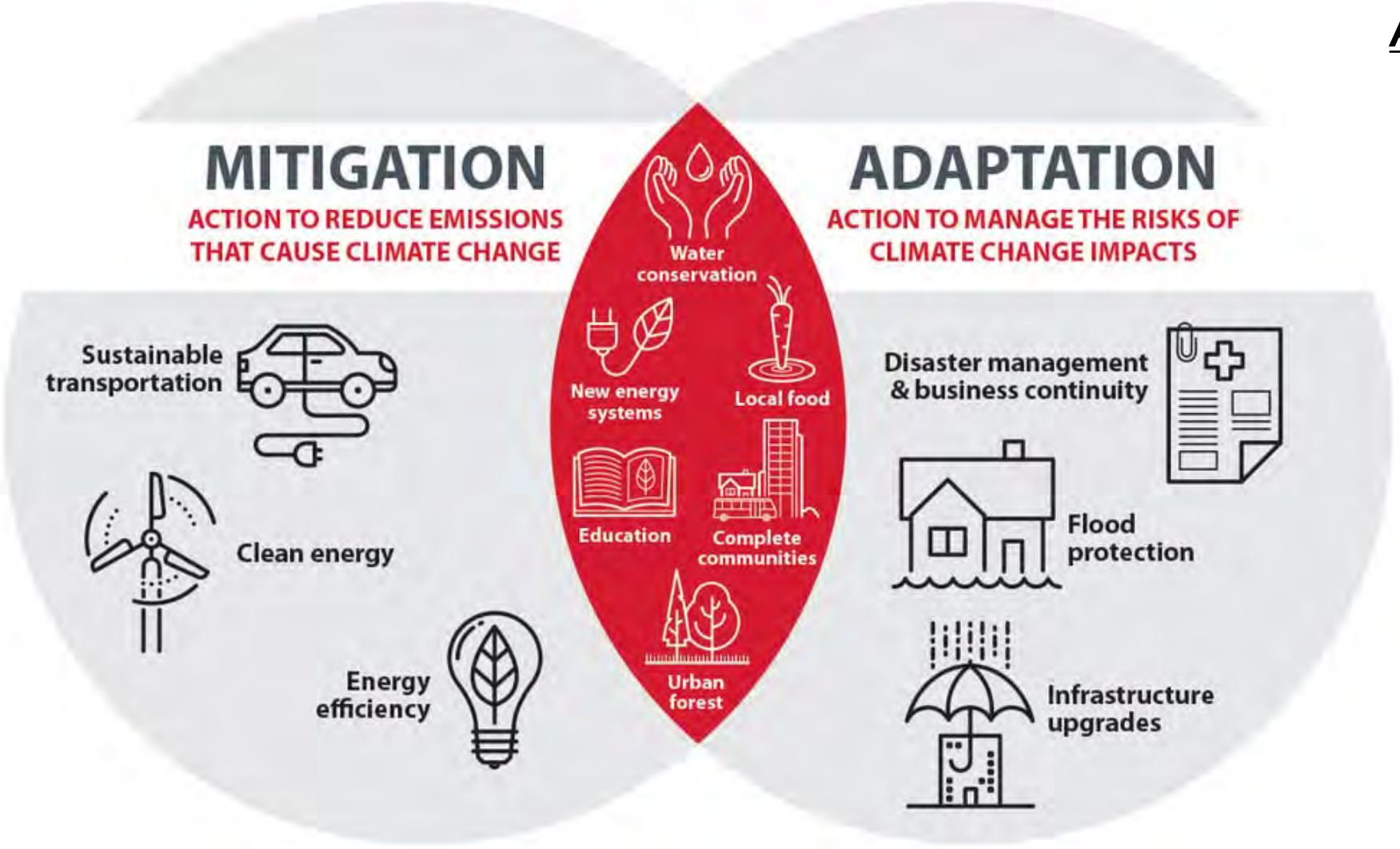
Key need to incorporate climate change into <u>near-, medium-, *and* long-term planning</u>

- **<u>Minimize</u>** risk of wasting time, money, and effort
- **<u>Maximize</u>** 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



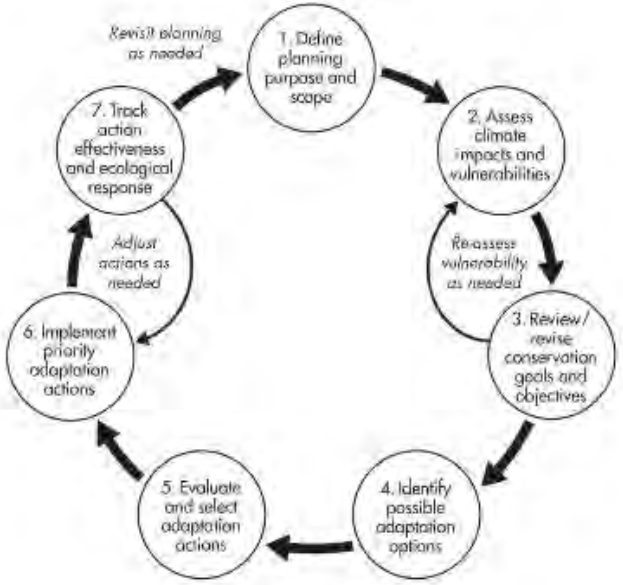
Adaptation is how we prepare for, respond to, and recover from the changes that we are already experiencing/ expected to experience.

- ✓ 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

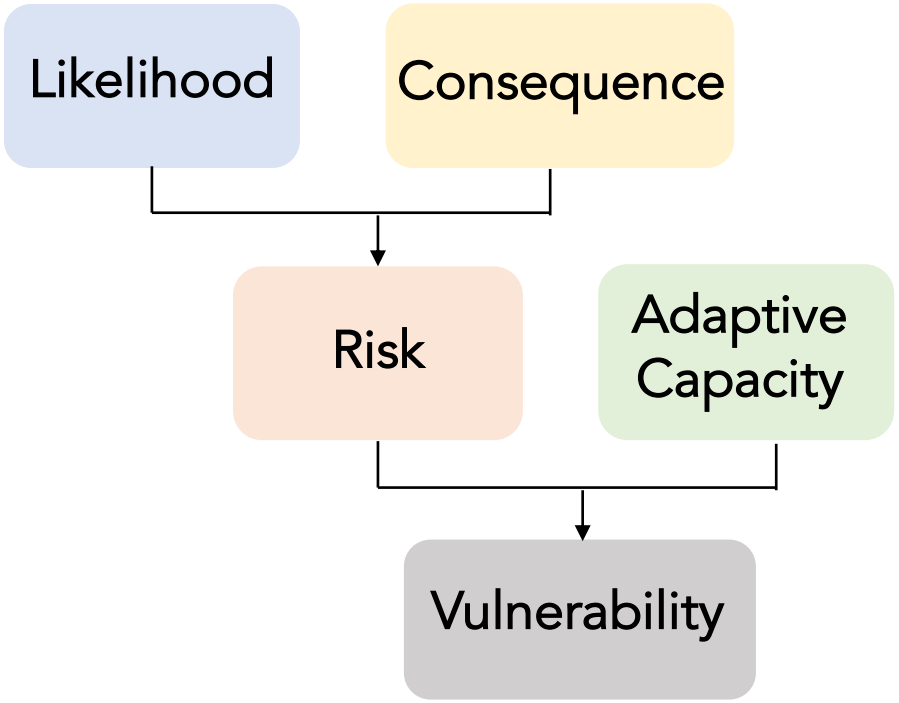
- Identify goals, desired outcomes of process
- Set geographic boundaries and timeframe
  - Near (e.g., length of a plan: 10-20 years)
  - Mid (25-50 years)
  - Long (e.g., lifespan of infrastructure: 50-100 years)
- Identify key stakeholders
- Identify key pre-existing conditions and climate stressors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

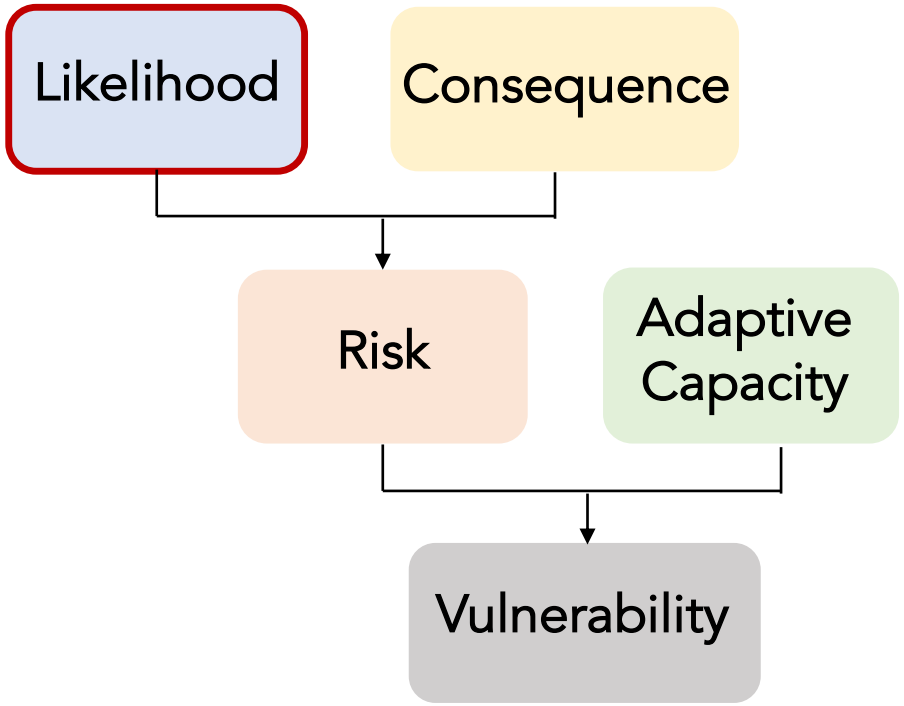
The degree to which natural, built, and human systems are susceptible to harm

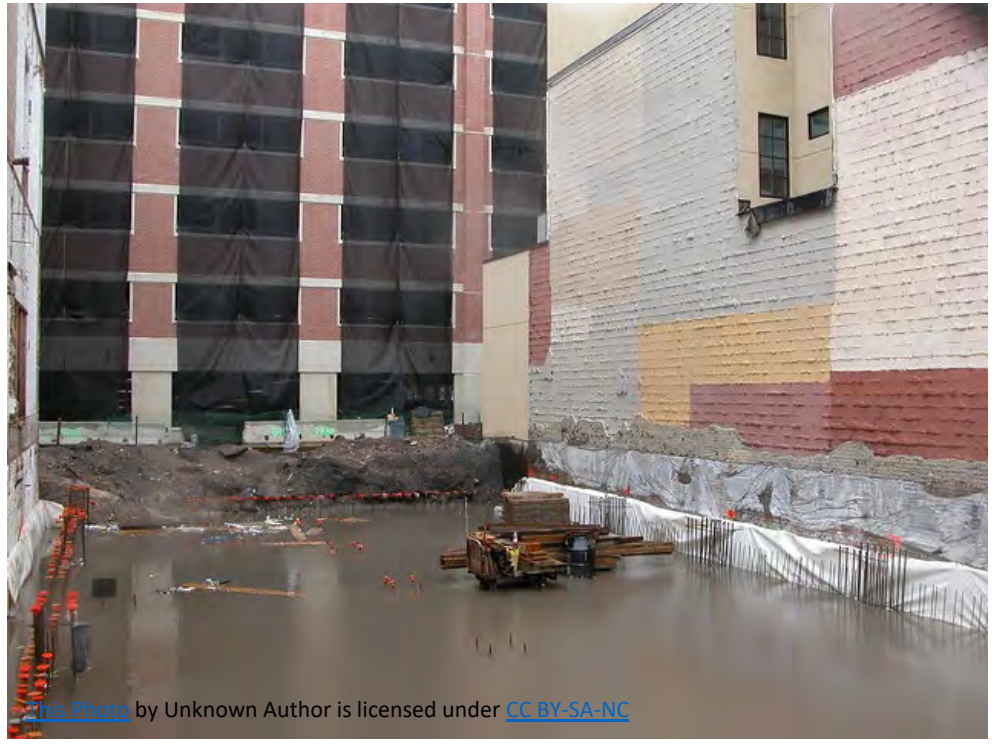
A function of the likelihood of ***exposure*** *to climate changes,* ***the consequence of those*** *changes, and the* ***capacity to adapt*** *to changes*

Why Assess Vulnerability?

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

Vulnerability Assessments: Likelihood

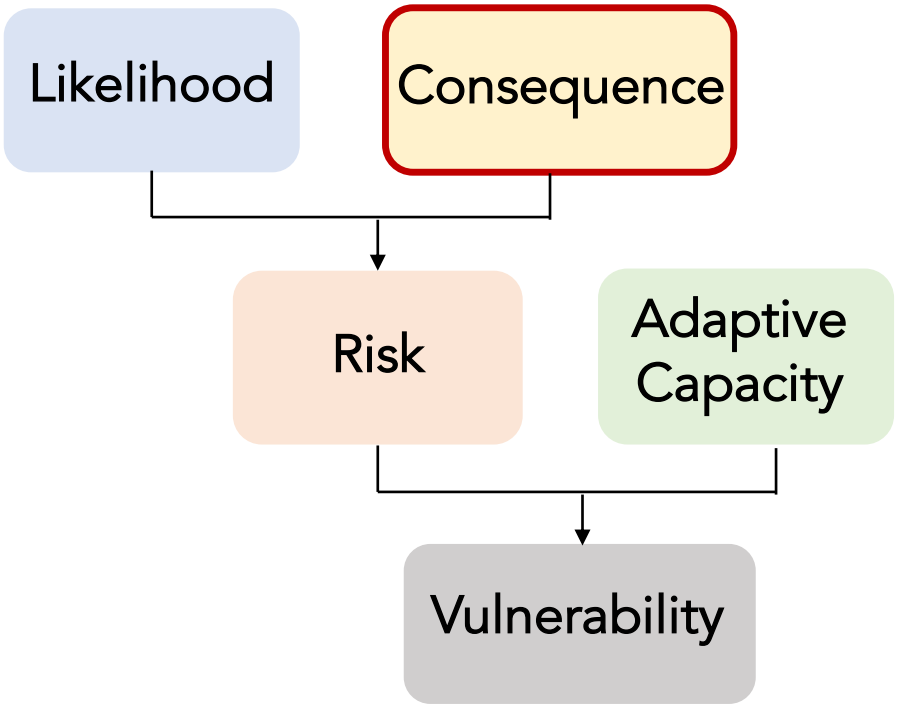




Likelihood:

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?)

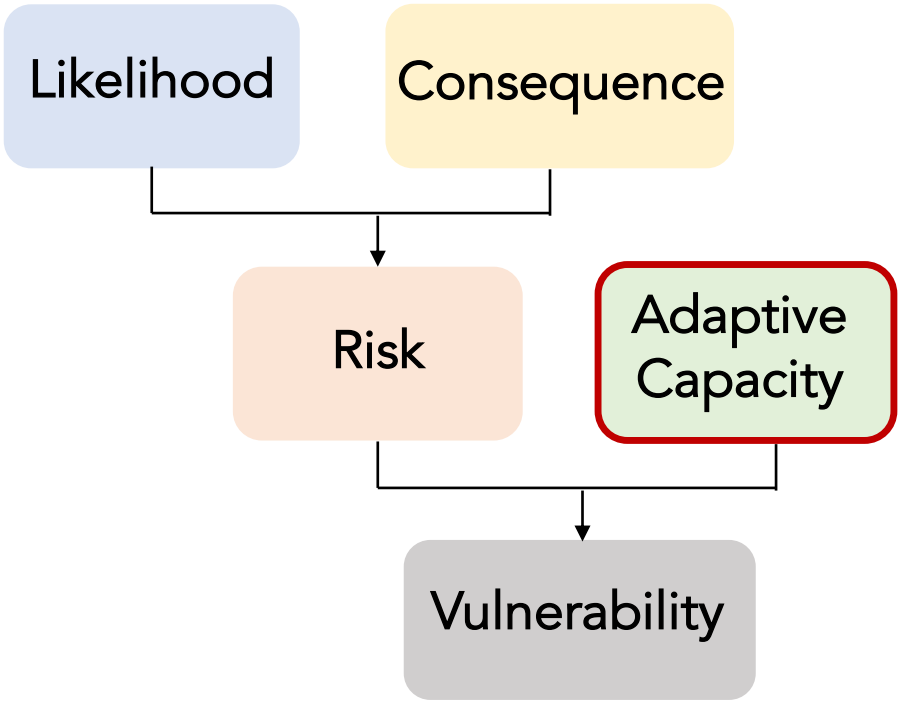
Vulnerability Assessments: Consequence



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?)

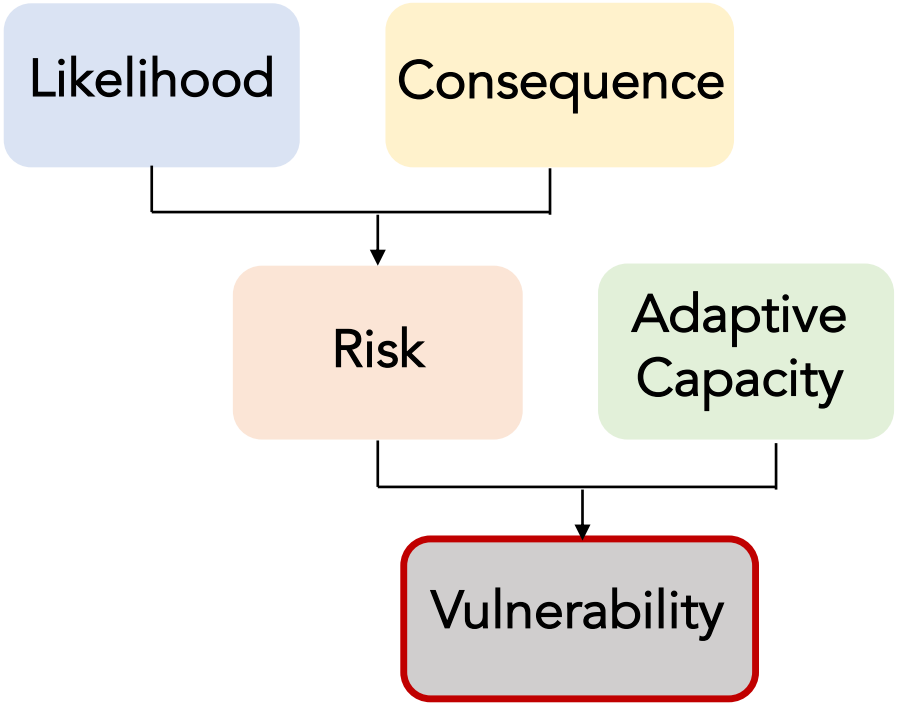
Vulnerability Assessments: Adaptive Capacity



Adaptive Capacity:

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

Vulnerability Assessments: Vulnerability



Vulnerability:

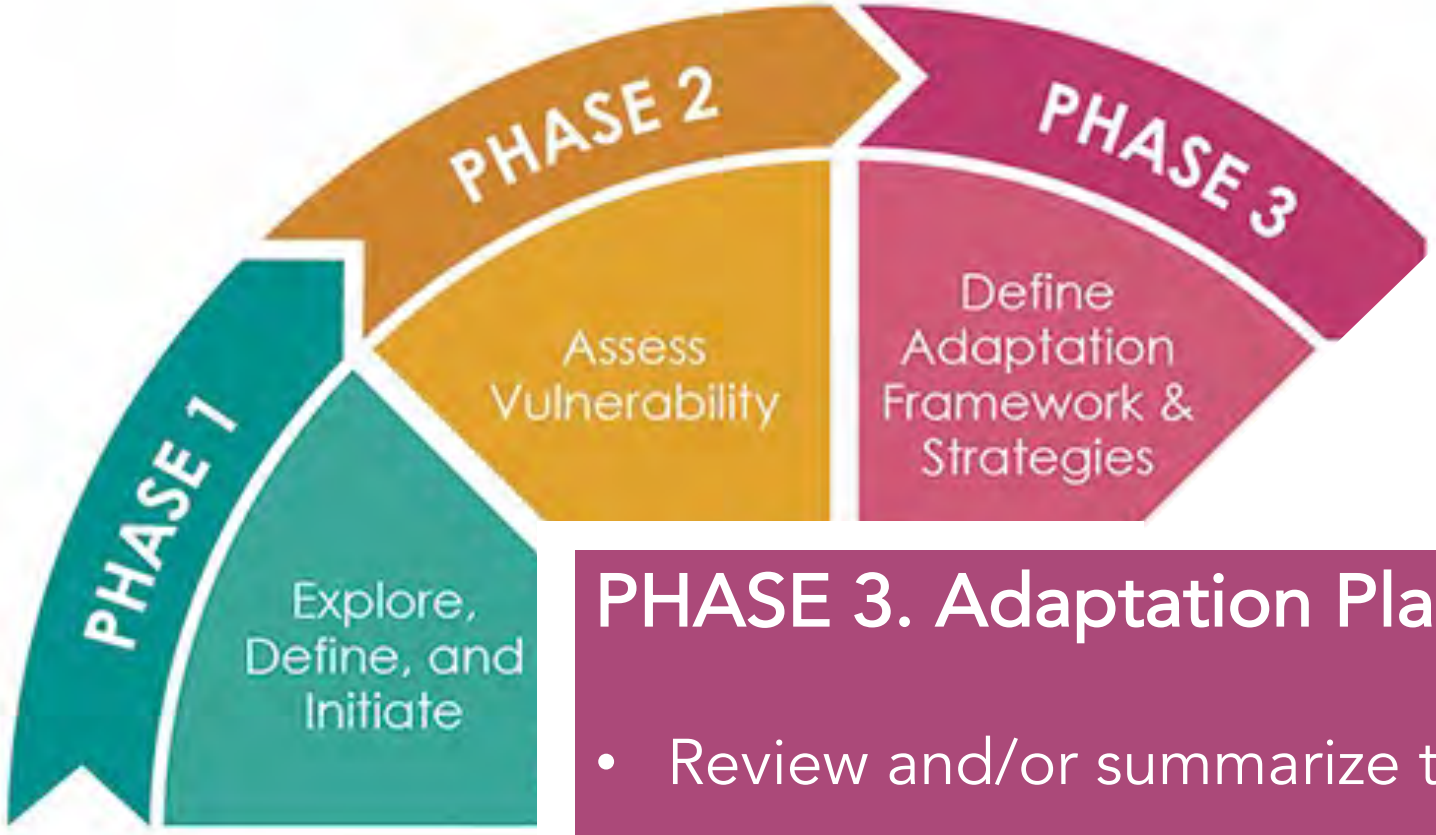
The degree to which an element or asset is susceptible to harm

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



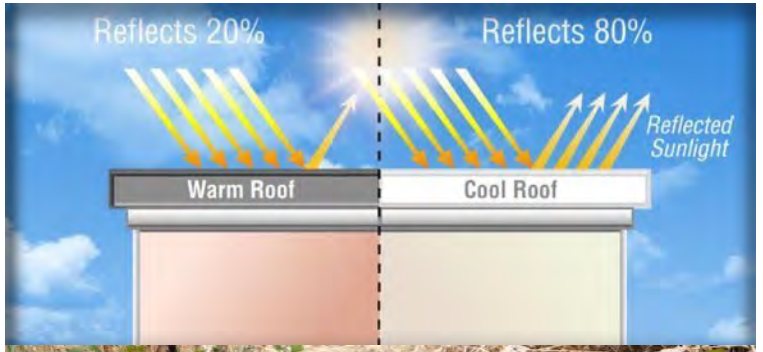
PHASE 3. Adaptation Planning

- 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

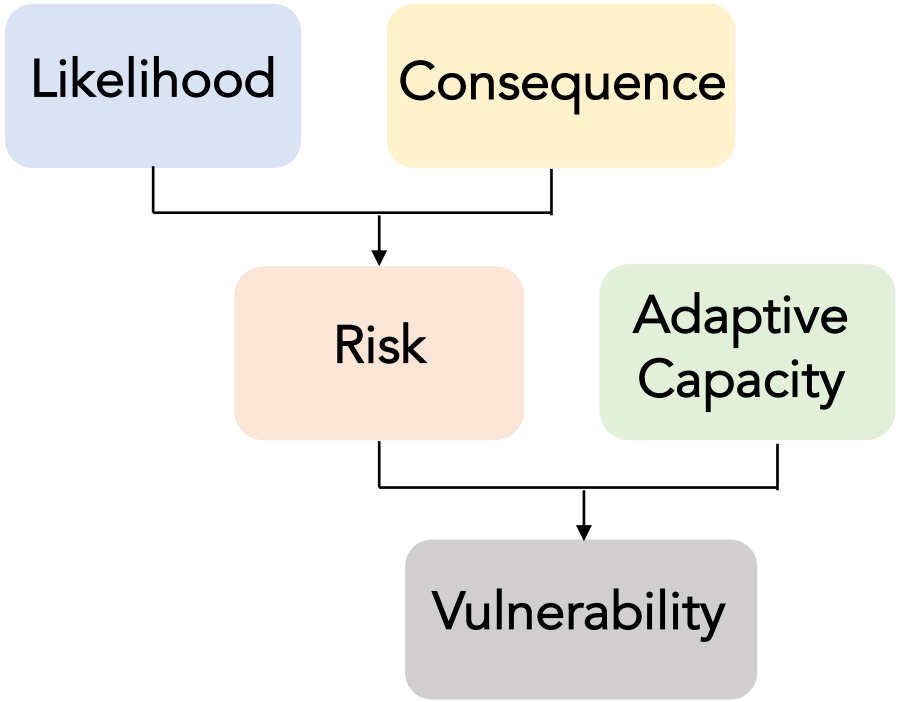


Using Vulnerability Results in Adaptation Planning

↓ 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

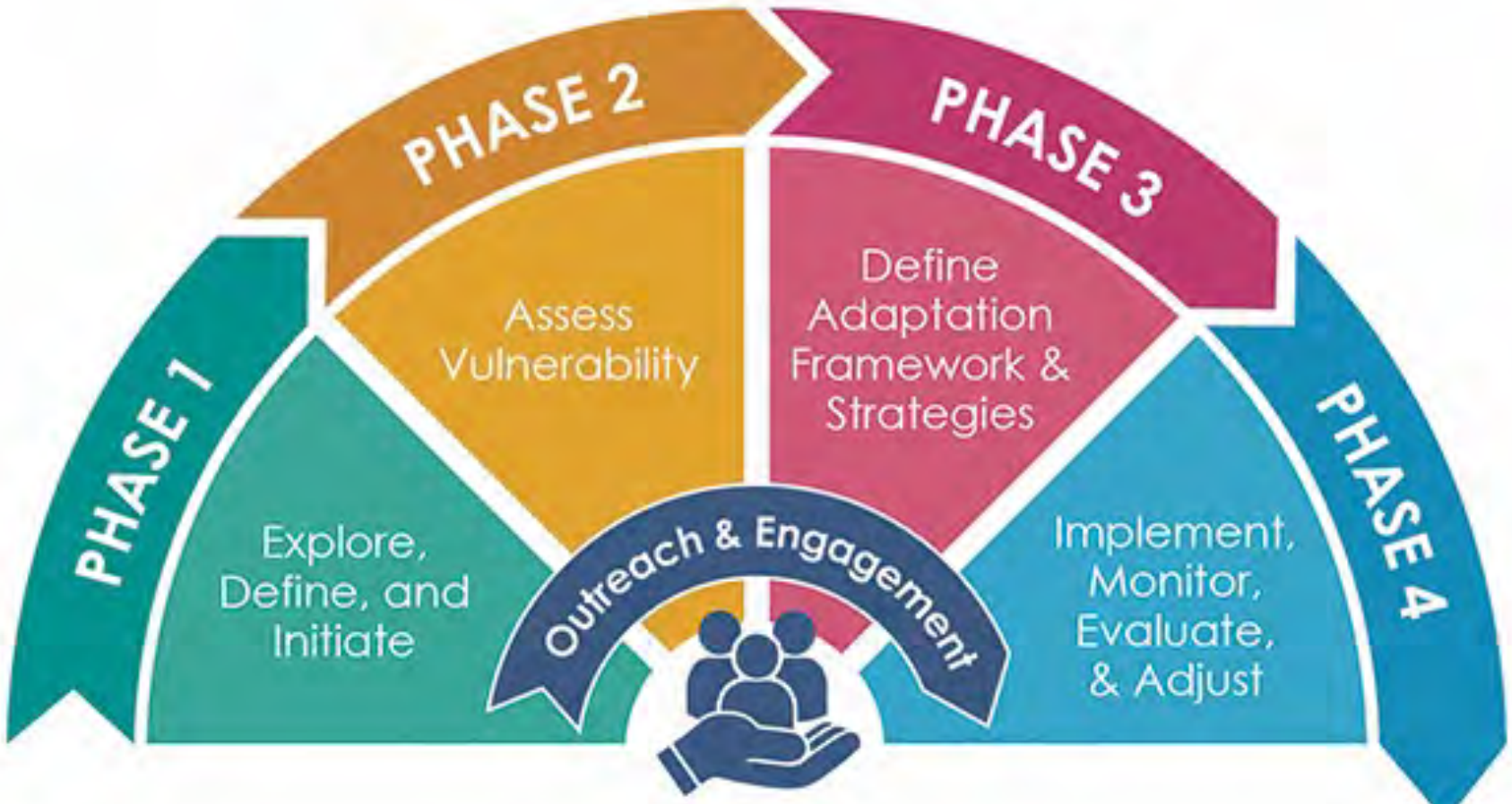
↓ Consequence (minimize effects)

- Site outside the floodplain

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

- Upgrade stormwater and 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

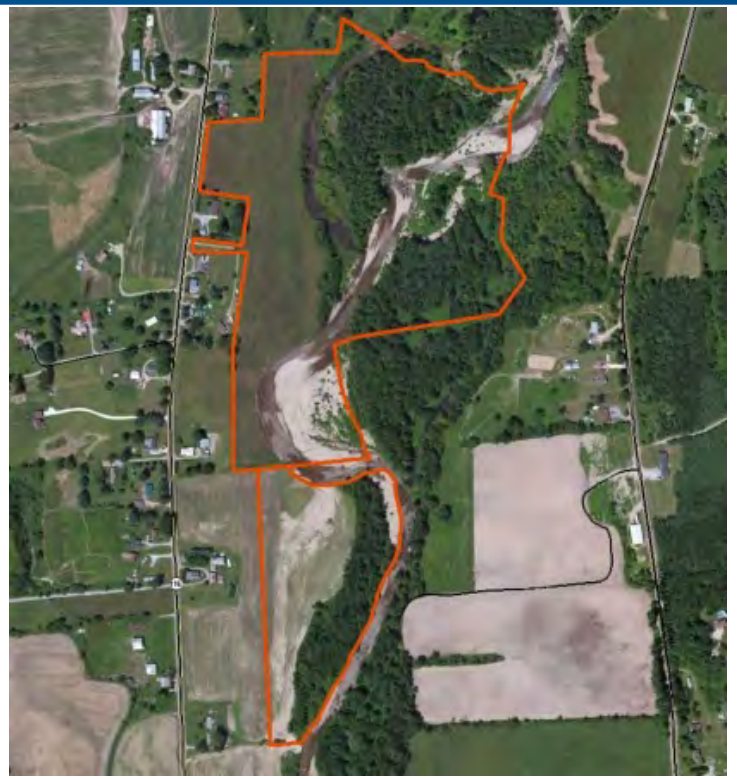
Case Study #2: Illinois

Case Study #1: Waterbury, VT

Flood Risk, Extreme Events

TROPICAL STORM IRENE 2011

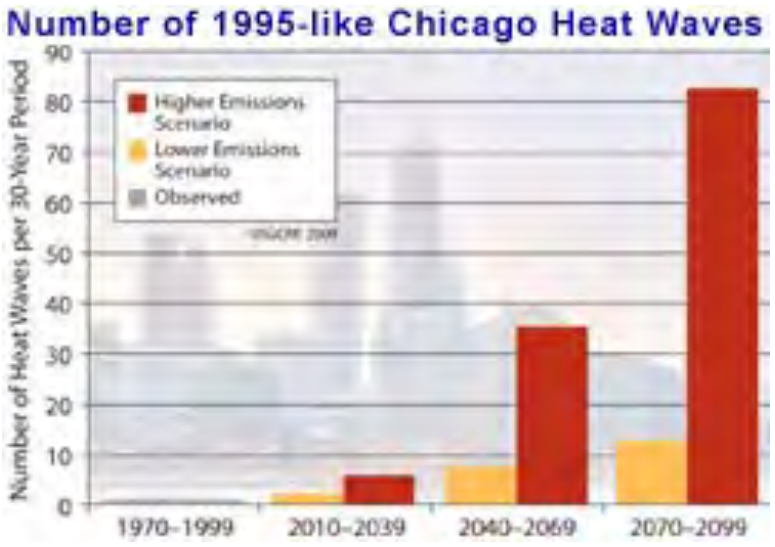
Case Study #1: Waterbury, VT



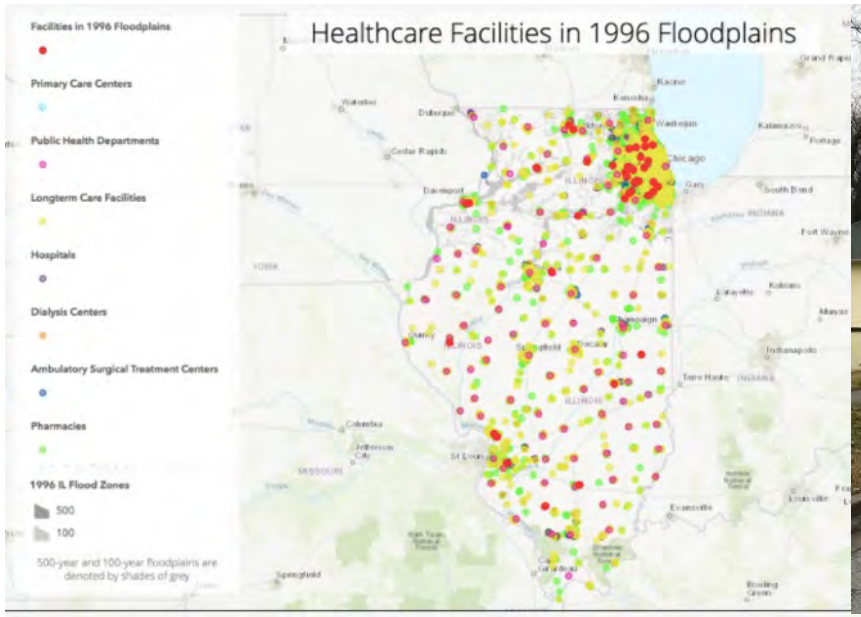
Adaptation Strategies

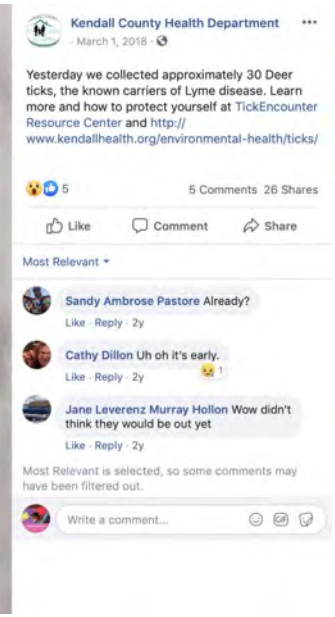
- Created a Flood Inundation Mapper to **identify areas exposed to damage** during real-time flooding to aid emergency responses
- Created home elevation and ground floor/basement fill-in **pilot projects** to elevate homes in 100-year floodplain
- **Inventoried bridges and culverts** to evaluate how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

Case Study #2: Illinois

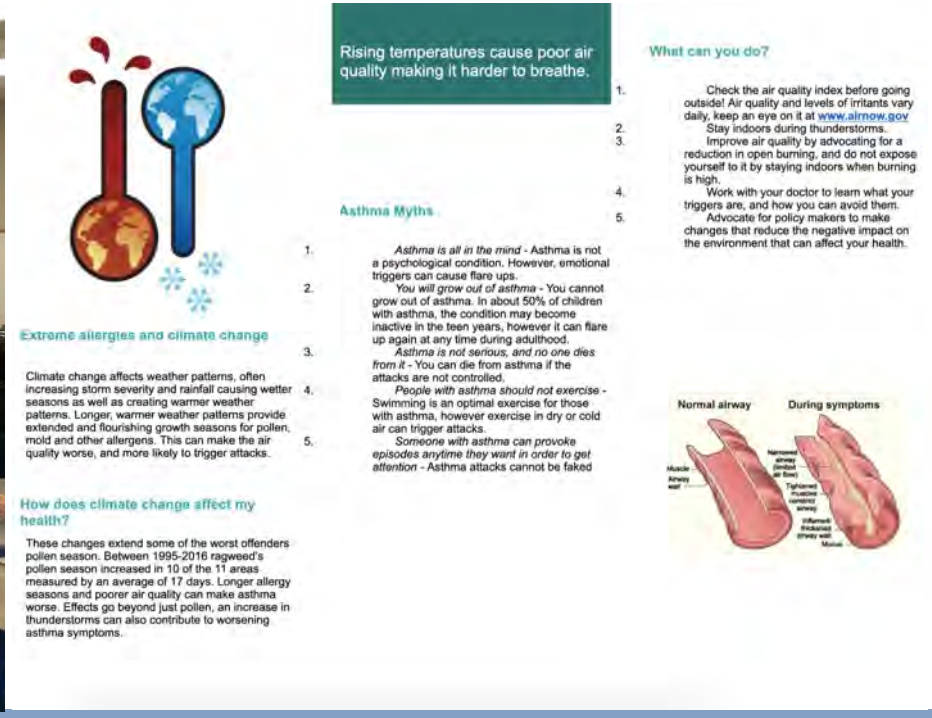


Heat Waves, Drought, Flooding





Case Study #2: Illinois



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.

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

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?

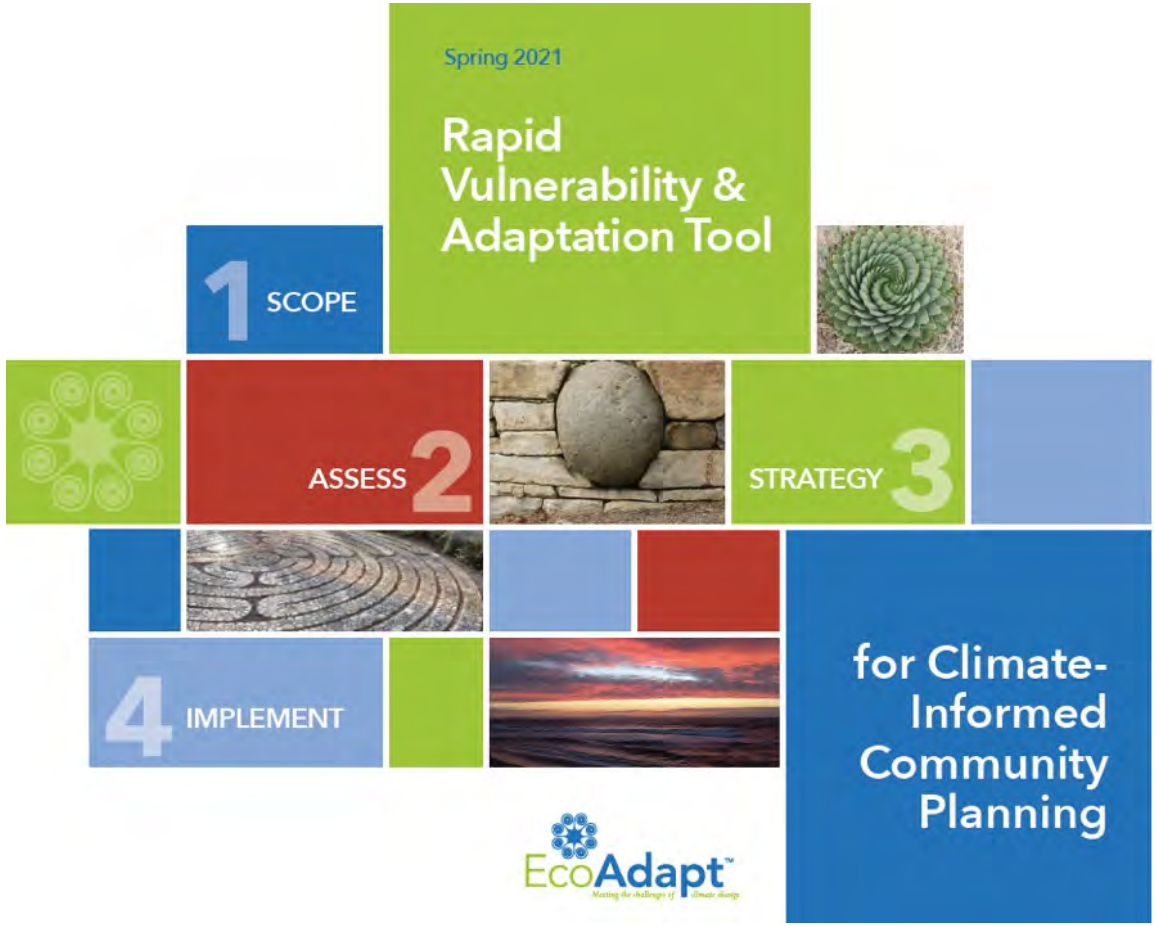
1. Check the air quality index before going outside! Air quality and levels of irritants vary daily, keep an eye on it at www.airnow.gov
2. Stay indoors during thunderstorms.
3. Improve air quality by advocating for a reduction in open burning, and do not expose yourself to it by staying indoors when 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

Questions?

Building a Climate Savvy Community

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BREAK

Pre-existing Conditions

Before you added climate change to your list of concerns, what else was already there?