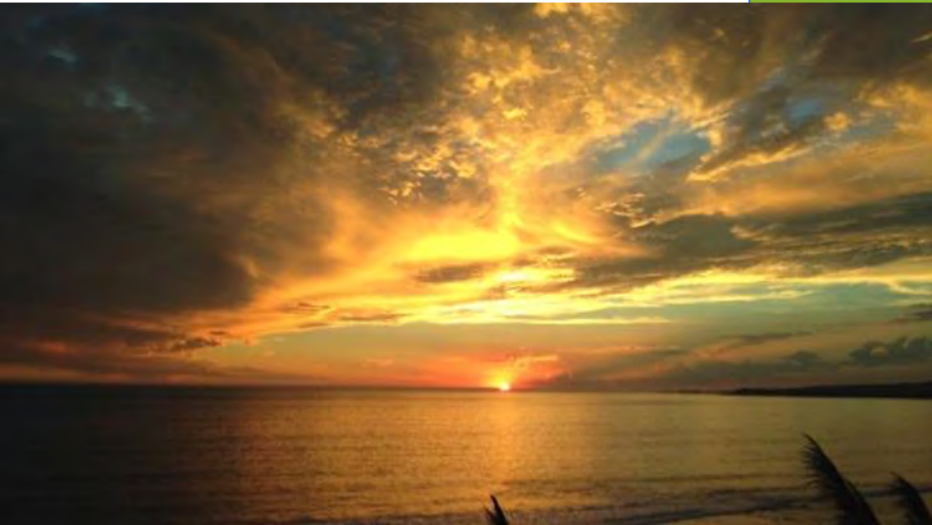


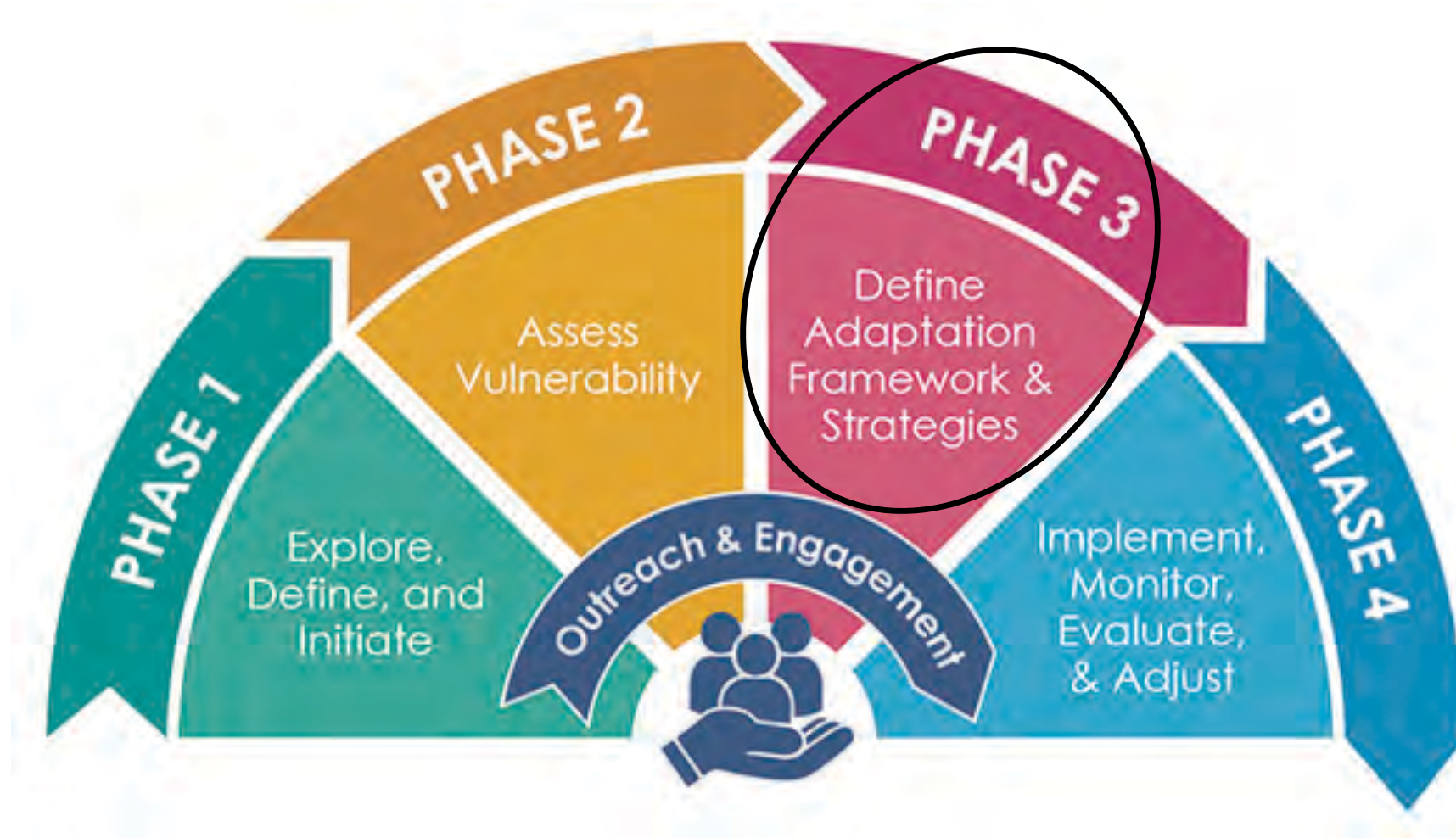


Introduction to Adaptation Strategies

Jessi Kershner



Adaptation Planning Process

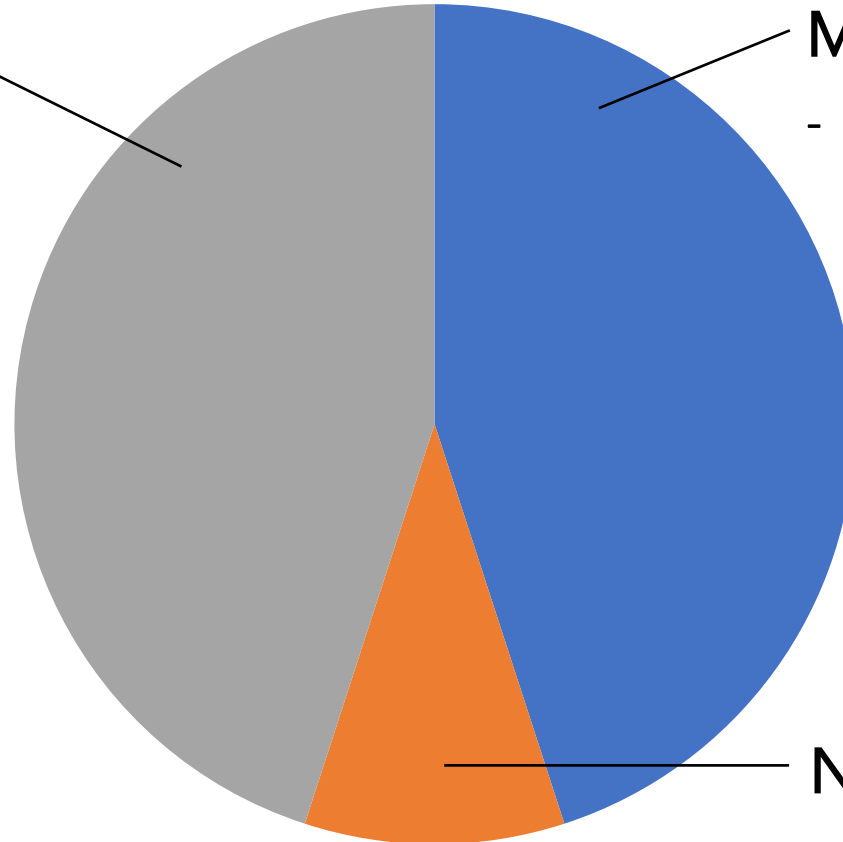


Decision Making in a Changing Climate



Current/same activities

- Educate public on water conservation



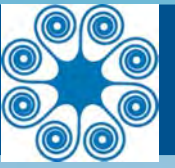
Modifications to current activities

- Incorporate projected changes in runoff into culvert designs

New/different activities

- Private property buy-outs in high fire hazard severity zones

Defining Adaptation



Adaptation strategies aim to reduce the negative effects or take advantage of the opportunities provided by climate change.

Adaptation strategies can reduce the vulnerability and/or increase the resilience of human, built, and natural systems to climate change.

General types of adaptation activities:

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

Programmatic



Strategies aimed at creating new or expanding existing programs, activities, or initiatives



Examples:

- Integrate climate into health programs
- Expand urban greening/agriculture
- Develop low-income energy programs
- Establish a shuttle system to cooling centers

Plans, Regulations, and Policy Development



Strategies aimed at developing or revising policies, plans, regulations, or guidelines



Examples:

- Provide backup power for cooling centers
- Develop heat emergency plan
- Establish urban tree management plan
- Increase parks in underserved communities

Capital Improvement/Infrastructure Projects



Strategies designed to address physical and functional deficiencies or needs in the built and natural environment



Problem: Roofs absorb heat energy and become very hot.
Source: Heat Island Group, Lawrence Berkley National Lab.

Solution: Increase roof reflectivity/emissivity.

Examples:

- Use green infrastructure for stormwater management
- Upgrade water systems
- Construct water storage facilities
- Install heat-reducing roof



Strategies that aim to gather information about climate changes, impacts, and/or management effectiveness

- May be a precursor to implementing another type of strategy



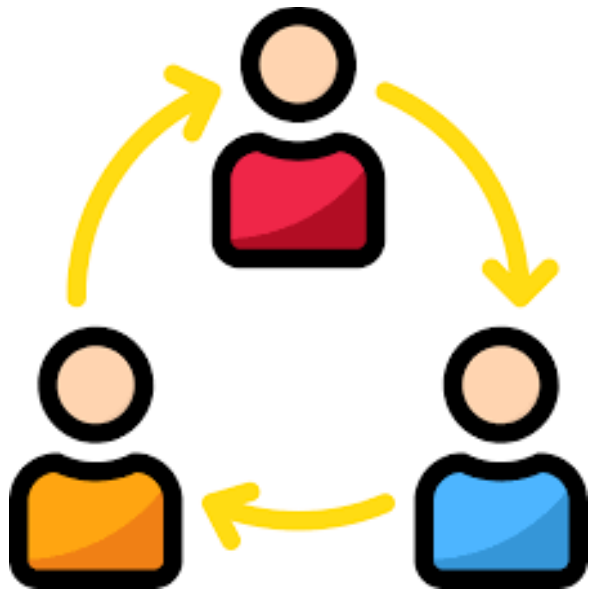
Examples:

- Incorporate future climate change projections into siting and design of all new transportation infrastructure
- Develop a fire risk assessment for all new development within fire hazard severity zones or the wildland-urban interface (WUI)
- Assess food security, food systems, and vital services to strengthen and diversify local and regional food systems

Collaboration/Coordination



Strategies that focus on initiating or expanding partnerships and relationships, communicating and sharing information, expanding awareness, or coordinating across organizational, jurisdictional, or political boundaries



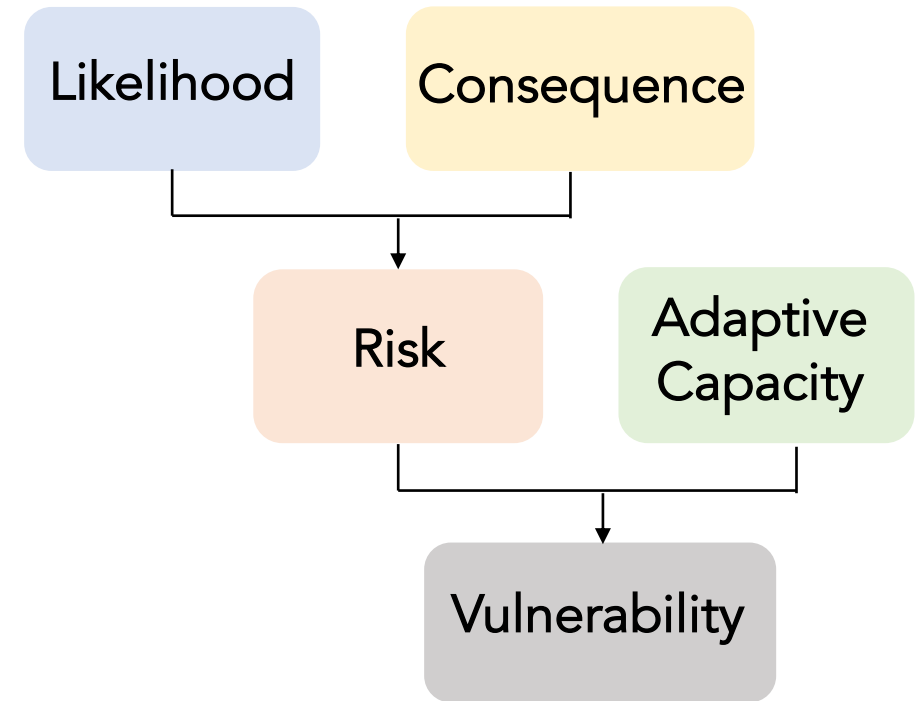
Examples:

- Work with local medical providers and hospitals to ensure that medical facilities are prepared to meet periods of increased demand
- Coordinate with local homeless services to ensure that emergency shelters are available during hazardous conditions (e.g., poor air quality)
- Coordinate with regional transportation agencies to ensure redundancy of critical transportation routes to allow for continued access and movement in the event of an emergency

Using Vulnerability Results in Adaptation Planning



- ↓ Likelihood/Exposure
- ↓ Consequence/Sensitivity
- ↑ Adaptive Capacity





↓ Likelihood/Exposure

- Increase shading and heat-mitigating materials on pedestrian walkways and transit stops
- Reduce stormwater runoff within residential neighborhoods that flood frequently
- Build or use existing facilities with air conditioning as cooling centers for populations vulnerable to extreme heat





↓ Consequence/Sensitivity

- Site outside the floodplain
- Stabilize burned slopes
- Develop a public outreach and education program for home owners and residents to better prepare for wildfire mitigation and protection





↑ Adaptive Capacity

- Upgrade wastewater systems
- Create policies that encourage solar and other renewable energy generation
- Build partnerships between public, private, and nonprofit sectors to provide critical services to vulnerable populations



Examples?



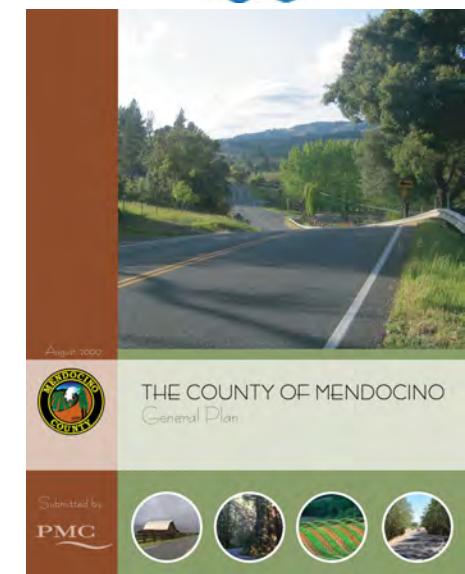
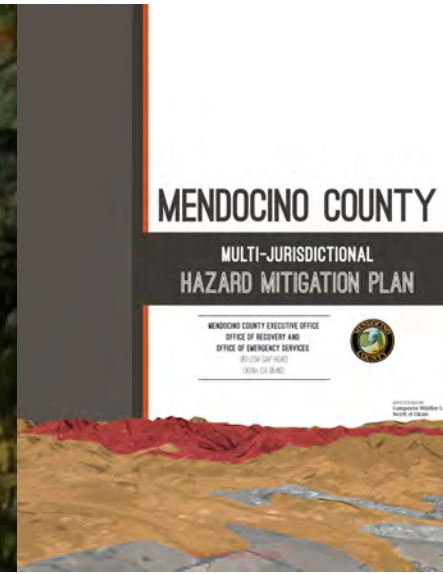
UP NEXT!

Case Study #1: Mendocino County, CA



↑ Flooding, Wildfires, Landslides, Sea Level Rise

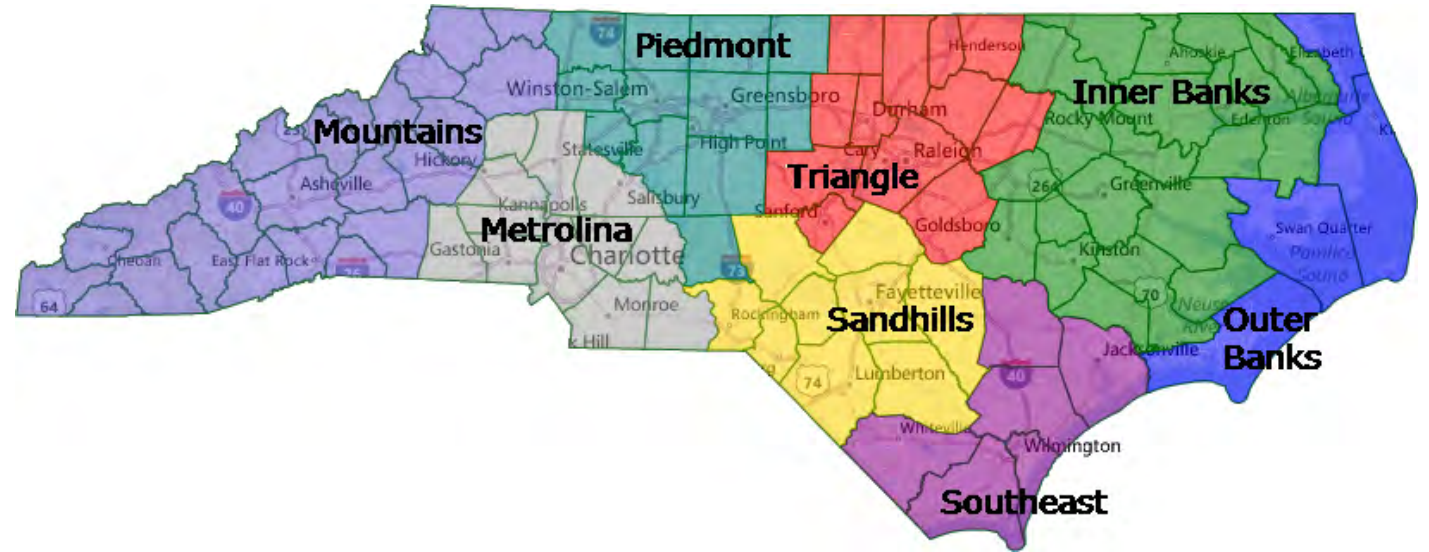
Case Study #1: Mendocino County, CA



Adaptation Strategies

- Updated Multi-jurisdictional Local Hazard Mitigation Plan concurrent with Safety Element Update
- Integrated Climate Change Vulnerability Assessment into both plans.
- Safety Element integrated LHMP and added new adaptation goals and policies to address vulnerabilities.
 - Improved collaboration with community-based organizations related to emergency preparedness for vulnerable populations.
 - New network of community resilience centers, esp. in disadvantaged communities.

Case Study #2: North Carolina



↑ Heat-related Illness, Wildfire Smoke Exposure

Adaptation Strategies

- Conducted a vulnerability assessment
- Piloting a heat alert system and education efforts
- Integrating smoke exposure and safety into education programs



Adaptation Approaches



RESISTANCE

RESILIENCE

RESPONSE



Managing for
Persistence

Managing for
Change



Strategies or actions that maintain current conditions by limiting change

- Near-term approach
- Resource and/or management-intensive



Examples:

- Create a program to provide community members with air purifiers, masks, and bottled water in case of extreme smoke and ash that results in poor air quality
- Reduce water losses within the system (e.g., repair/replace aging infrastructure)



Strategies or actions that accommodate some change but enable a return to a prior desired condition

- Near- to mid-term approach
- Management-intensive in the near-term; increasing resources needed to maintain desired outcome



Examples:

- Improve stormwater management to reduce the risk of road/street flooding (e.g., install rain gardens)
- Explore feasibility of supply side diversification, resilient electrical distribution infrastructure, and facilitate access to local, decentralized renewable energy



Strategies or actions that intentionally facilitate change and adaptively respond to new conditions

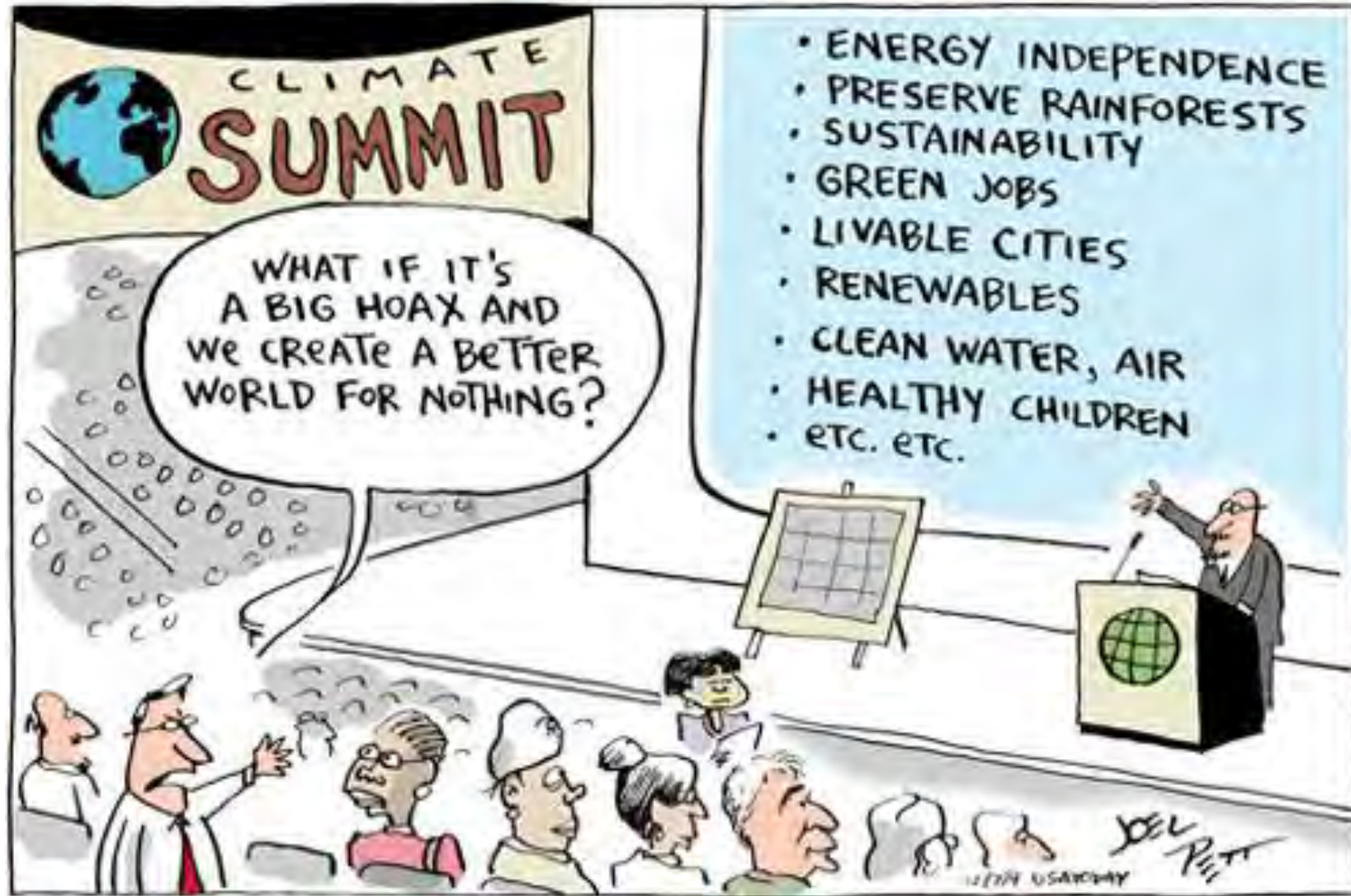
- Long-term approach
- Variable intensity (e.g., may require more resources up front, or gradual changes to put into practice)



Examples:

- Develop programs to train workers to install and maintain new green technologies
- Shifting the palette of trees planted to species better adapted to projected future conditions (<https://climateredytrees.ucdavis.edu/>)

Questions?



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