

Climate Change: Adaptation and Resilience

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Adaptation and Resilience

Adaptation

- The process of adjustment to actual or expected climate and its effects.
- In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities.
- In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

Resilience

- The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure.
- Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation

Innovation Challenge:

Scaling strategies for Climate Change Adaptation and Resilience are in their Infancy

OPINION

Opinion: Climate change isn't just about emissions. We're ignoring a huge part of the fight



A firefighter walks through Sequoia National Park during a prescribed burn, one of California's resilience strategies to battle the growing risk of large wildfires. (Gina Ferazzi / Los Angeles Times)

BY DAVID G. VICTOR AND VEERABHADRAN RAMANATHAN

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“Adaptation to the consequences of global warming doesn’t come just from singular activities, like flipping a switch; it’s processes that will affect all of society and can easily go awry. Similarly, a serious resilience strategy can’t be piecemeal: It involves power grids and other infrastructure that must be managed at a large scale, and every locality needs to learn from ideas that get tested around the country and world.”

Risk: Hazard, Exposure, and Vulnerability

Figure 5.1 Risk as defined by the IPCC

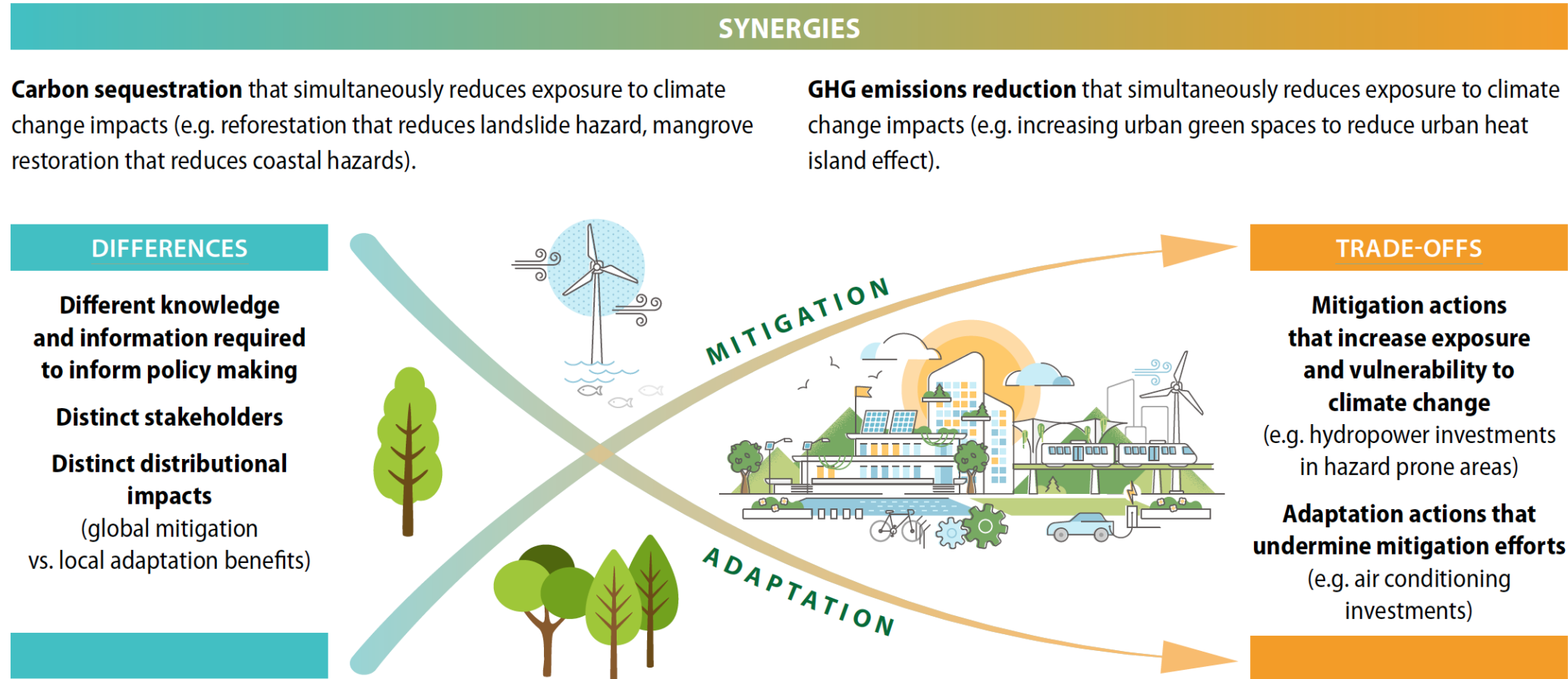


Figure 1

Impacts of Climate Change on Californians



FIGURE 2. **Aligning climate change mitigation and adaptation policies: differences, synergies and trade-offs**



Effective Adaptation Principles

- (1) minimize costs, and maximize benefits
- (2) support achievement of material, subjective, and relational wellbeing goals
- (3) reduce vulnerability and/or increase adaptive capacity, especially of the most vulnerable and those most at risk to climate change
- (4) increase resilience by building functional persistence over long timescales so that systems have the ability to bounce back from climatic shocks
- (5) be economically, ecologically, and socially sustainable, explicitly looking at longer-term, cross-generational viability of adaptation actions
- (6) take into account unintended negative consequences and explicitly look at the cross-scalar, long-term impacts of adaptation actions
- (7) invest in ecosystem conservation, management and restoration to enhance ecosystem services, and hence reduce impacts of climate change on human systems
- (8) be co-produced with communities to ensure inclusive and sustainable adaptation
- (9) be oriented towards achieving transparency, accountability and representation in governance through multi-scalar, participatory, and inclusive processes
- (10) be oriented toward socially just and equitable processes and outcomes
- (11) be a process that fundamentally changes human thinking and practices in the face of climate change and overtly challenge the power structures that generate vulnerability to its impacts

Adaptation and Mitigation Synergies and Trade-Offs, Table 1 Common wisdom of differences and similarities between mitigation and adaptation (based on Dang et al. 2003; Swart and Raes 2007; Locatelli et al. 2011)

	Mitigation	Adaptation
Common goal	Aiming at reduction of climate change risks	
Common enabling factors and barriers	Institutions and governance; innovation and investments in environmentally sound technologies and infrastructure; sustainable livelihoods and behavioral and lifestyle choices; capacity of managing climate risks	
Final goals	Reduces negative impacts of climate change risks	Takes advantage of positive impacts and reduces the negative ones of climate change risks
Cause/effect	Primarily reduces the cause	Primarily addresses the consequences
Spatial scale	Primarily an international issue, as mitigation provides global benefits	Primarily a local issue, as adaptation mostly provides benefits at the local scale
Time scale	Mitigation has a long-term effect on climate change because of the inertia of the climatic system	Adaptation can have a short-term effect on the reduction of vulnerability
Sectors	Some sectors are mostly concerned by mitigation (e.g. energy, transportation, forestry and agriculture)	Some sectors are mostly concerned by adaptation (e.g. agriculture, tourism and recreation, human health, water supply, coastal management, urban planning, nature conservation and energy)
Metric	There is a single metric to account for and compare the costs and benefits (i.e. monetary terms and CO ₂ -equivalents emission respectively)	There is not a single metric to account for and compare the costs and benefits (e.g. monetary damage avoided, human lives saved, losses to natural and cultural values avoided)
Beneficiaries	Mainly global benefits, then free-riding behavior	Mainly private benefits, then motivated by the self-interest of affected actors

Comments

Ideas

Questions?

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