

EcoAdapt's Climate Vulnerability Assessment Quick Guide

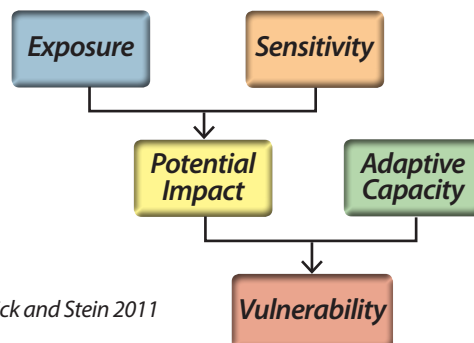
$$V = E + S - AC$$

V = Vulnerability to climate change

E = Exposure is how much change occurs, including changes outside the project area that affect the target (e.g. loss of glaciers loss of water supply)

S = Sensitivity is how much the target is affected by a given amount of change

AC = Adaptive Capacity is the ability of an individual, community, or ecosystem to adapt to change; this reflects intrinsic traits (behavioral flexibility that allows individuals to respond to new situations) and extrinsic factors (e.g. degree of habitat fragmentation)



From Glick and Stein 2011

Potential Impact = the result of the interaction between *exposure* and *sensitivity*

Your vulnerability assessment goal affects how you do the assessment (e.g. audience, target, spatial and temporal scale, products). Some possible targets/ objectives of a vulnerability assessment include:

1. Informing decisions about whether or not to list a species under the Endangered Species Act
2. Setting acquisition priorities for an agency, land trust, or similar organization
3. Developing a management plan for a park, reserve, or other management unit
4. Deciding which management measures to use for a restoration project

OPTIONS FOR DECREASING VULNERABILITY OF A SPECIES OR A SYSTEM

1. Decreasing **EXPOSURE**

2. Decreasing **SENSITIVITY**

3. Increasing **ADAPTIVE CAPACITY**

1. Examples of decreasing **EXPOSURE**

- Reducing greenhouse gas emission to reduce rate and extent of global change
- Restoring wetlands to limit increases in drought and flooding
- Replanting riparian vegetation to limit in-stream water temperature increases
- Increasing use of permeable pavements and other low-impact approaches to decrease runoff/increase groundwater recharge, which limits increases in drought and flooding

2. Examples of decreasing **SENSITIVITY**

- Reducing or limiting levels of pollutants that increase temperature sensitivity
- In restoration projects, replanting with a mix of species that can cope with a range of climatic conditions
- Breeding or supporting the evolution of tolerance for likely future conditions in key populations of plants and animals
- Anticipating and preventing (e.g. through programs to increase efficiency of water use by farms or municipalities) increased demands on resources by people as a result of climate change

3. Examples of increasing **ADAPTIVE CAPACITY**:

- Making sure populations of plants and animals are healthy and genetically diverse enough to adapt to changing conditions through evolution from one generation to the next
- Maintaining connections across the landscape and between different populations to support recovery from adverse events in part of a species' range
- Focusing protection efforts on areas with many climatic microhabitats
- Increasing land or seascape connectivity to support species range shifts



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