

# Menu of Adaptation Strategies and Approaches

## Developed for Forest Carbon Management

### Strategy 1: Maintain or increase extent of forest ecosystems.

- 1.1. Avoid forest conversion to nonforest land uses.
- 1.2. Reforest lands that have been deforested and afforest suitable lands.
- 1.3. Increase the extent of forest cover within urban areas.
- 1.4. Increase or implement agroforestry practices.

### Strategy 2: Sustain fundamental ecological functions.

- 2.1. Reduce impacts on soils and nutrient cycling.
- 2.2. Maintain or restore hydrology.
- 2.3. Prevent the introduction and establishment of invasive plant species and remove existing invasives.
- 2.4. Maintain or improve the ability of forests to resist pests and pathogens.
- 2.5. Reduce competition for moisture, nutrients, and light.

### Strategy 3: Reduce carbon losses from natural disturbance, including wildfire.

- 3.1. Restore or maintain fire in fire-adapted ecosystems.
- 3.2. Establish natural or artificial fuelbreaks to slow the spread of catastrophic fire.
- 3.3. Alter forest structure or composition to reduce the risk, severity, or extent of wildfire.
- 3.4. Reduce the risk of tree mortality from biological or climatic stressors in fire-prone systems.
- 3.5. Alter forest structure to reduce the risk, severity, or extent of wind and ice damage.

### Strategy 4: Enhance forest recovery following disturbance.

- 4.1. Promptly revegetate sites after disturbance.
- 4.2. Restore disturbed sites with a diversity of species that are adapted to future conditions.
- 4.3. Protect future-adapted seedlings and saplings.
- 4.4. Guide species composition at early stages of development to meet expected future conditions.

### Strategy 5: Prioritize management of locations that provide high carbon value across the landscape.

- 5.1. Prioritize low-vulnerability sites for maintaining or enhancing carbon stocks.
- 5.2. Establish reserves on sites with high carbon density.

### Strategy 6: Maintain or enhance existing carbon stocks while retaining forest character.

- 6.1. Increase structural complexity through retention of biological legacies in living and dead wood.
- 6.2. Increase stocking on well-stocked or understocked forest lands.
- 6.3. Increase harvest frequency or intensity because of greater risk of tree mortality.
- 6.4. Disfavor species that are distinctly maladapted.
- 6.5. Manage for existing species and genotypes with wide moisture and temperature tolerances.
- 6.6. Promote species and structural diversity to enhance carbon capture and storage efficiency.
- 6.7. Use seeds, germplasm, and other genetic material from across a greater geographic range.

### Strategy 7: Enhance or maintain sequestration capacity through significant forest alterations.

- 7.1. Favor existing species or genotypes that are better adapted to future conditions.
- 7.2. Alter forest composition or structure to maximize carbon stocks.
- 7.3. Promote species with enhanced carbon density in woody biomass.
- 7.4. Introduce species or genotypes that are expected to be adapted to future conditions.

**MORE INFORMATION:** This menu of adaptation strategies and approaches can be used within the Adaptation Workbook decision-support framework found in Swanston, C.W.; Janowiak, M.K.; Brandt, L. A.; Butler, P.R.; Handler, S. D.; Shannon, P.D.; Derby Lewis, A.; Hall, K.; Fahey, R.T.; Scott, L.; Kerber, A.; Miesbauer, J.W.; Darling, L.; Parker, L.; St. Pierre, M. 2016. **Forest adaptation resources: climate change tools and approaches for land managers, 2nd ed.** Gen. Tech. Rep. NRS-GTR-87-2. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 161 p. [doi.org/10.2737/NRS-GTR-87-2](https://doi.org/10.2737/NRS-GTR-87-2).

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