

Menu of Adaptation Strategies and Approaches

Developed for forest carbon management

Strategy 1: Maintain or increase extent of forest ecosystems

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

Strategy 2: Sustain fundamental ecological functions

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

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

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

Strategy 4: Enhance forest recovery following disturbance

- Approach 4.1 Promptly revegetate sites after disturbance
- Approach 4.2 Restore disturbed sites with a diversity of species that are adapted to future conditions
- Approach 4.3 Protect future-adapted seedlings and saplings
- Approach 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

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

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

- Approach 6.1 Increase structural complexity through retention of biological legacies in living and dead wood
- Approach 6.2 Increase stocking on well-stocked or understocked forest lands
- Approach 6.3 Increase harvest frequency or intensity because of greater risk of tree mortality
- Approach 6.4 Disfavor species that are distinctly maladapted
- Approach 6.5 Manage for existing species and genotypes with wide moisture and temperature tolerances
- Approach 6.6 Promote species and structural diversity to enhance carbon capture and storage efficiency
- Approach 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

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



Source: Ontl et al. 2020. Forest Management for Carbon Sequestration and Climate Adaptation. *Journal of Forestry* 118(1): 86-101, doi:10.1093/jfore/fvz062. **More information:** forestadaptation.org/carbon

A supplemental topic to be used in the decision-support framework – Swanston et al, 2016. *Forest Adaptation Resources: climate change tools and approaches for land managers*, 2nd edition. <http://www.treesearch.fs.fed.us/pubs/52760>

More information can be found at www.forestadaptation.org/strategies