

SECTION 5

Solutions for Change

Individual and group actions can create sustainable forests and communities.



WHETHER YOU HAVE USED all of the previous activities in this module or selected a few that are most appropriate for your class, students are likely to need additional time to make connections between these concepts and to reflect on how this information can be used. In addition, many students are most interested in what they can do immediately to address the issue of *climate change*. This section provides three activities that will help you and your students link concepts together, apply them to local forests, and consider ways to take action.

ACTIVITY 12: The Carbon Puzzle helps students connect the concepts of *carbon sequestration* in pine forests, *carbon storage* in wood products, and *forest product substitution*. This activity is based on research that assesses these three *carbon pools* to understand how to maximize the removal of atmospheric carbon. It is a good culmination to the *life cycle assessment* activities in Section 4 and the carbon sequestration calculations in Activity 8. The activity begins with a review of the *carbon cycle*, in case you did not use Activity 7. Students are introduced to the concepts through a Six Bits group exercise where they assess a series of facts to answer the following question: How can we best manage planted pine forests and wood to

reduce atmospheric *carbon dioxide*? Afterward, you can walk students through the development of the graph that combines multiple carbon pools using the Tracking Carbon presentation. Students will be able to use this information to answer questions as they interpret the graph. The pilot tests for this activity suggest that conducting the group exercise first makes the topic more interesting and engaging and helps the students better understand the graphing activity.

ACTIVITY 13: Future of Our Forests allows student teams to become experts on one aspect of climate change and forests in the Southeast. Each aspect reflects a component of the module and summarizes the activities they have completed. After researching specific topics, students give presentations to the class and then compile reports, letters, or essays to synthesize their classmates' presentations about the future of southeastern forests. This may be a challenging activity if students have not participated in activities from all the sections. Using the chart provided for this activity, you can reduce the number of student teams to match the activities you have used, though the final summary may suffer from the missing topics.

The activities in this section will help students reflect on what they've learned, link concepts together, and consider ways to take action.



GREGORY PEREZ, VIRGINIA STATE UNIVERSITY



ACTIVITY 14: Starting a Climate Service-Learning Project provides guidance to plan and complete a service-learning project related to local forests and climate change solutions. Using the knowledge they have gained by completing the module activities, students can work with local resource managers to select a reasonable and useful action for their school or community.

Potential Areas of Confusion

There are several topics in this section that may be sources of confusion for students, based on their existing knowledge, assumptions, or prior experiences. You may be able to use questions to uncover this confusion and steer students toward the clarifications provided in the table.

Key Concepts in This Section

- The impact on atmospheric carbon of substituting a less carbon-intensive

product includes the *carbon savings* accrued by not using the more carbon-intensive product. Distinguishing between similar products requires that students know which product requires less *fossil fuel* to produce or use, avoids generating carbon dioxide, and can be *recycled* to reduce carbon emissions.

- Many strategies can be used to enhance forests, mitigate climate change, and adapt to future climate changes. While each of these strategies can be important and appropriate by themselves, they may be more effective when implemented together.
- While there may be many details that people disagree on, they are likely to agree that forests are important to their communities. Maintaining healthy forests is a good goal, and many people can work together to do so.
- Students can make a difference by being leaders in creating positive change within their communities.

Assumption or Confusion	More Adequate Conception
Mitigation strategies through forest management will be a waste if climate change isn't really occurring.	Even without thinking about climate change, most people agree that forests are important and that maintaining healthy and productive forests is a good goal for many reasons. Improving forest health is not a waste.
We can completely reverse or solve climate change with the right solutions.	The residual time for carbon dioxide in the atmosphere leads climatologists to believe that global warming will continue to occur due to recent greenhouse gas emissions even if immediate and significant action is taken to curb these emissions.
If we can implement climate change mitigation strategies, we don't need to worry about adapting to projected changes. Or, if we focus on how to adapt to projected climate changes, we don't need to change our behaviors using mitigation strategies.	Solutions should consider both mitigation and adaptation strategies so that we can reduce climate change impacts as much as possible and prepare for projected changes that cannot be avoided.
Maximizing carbon sequestration depends on keeping trees alive and growing, not cutting them down.	Growing trees is one important way to sequester carbon. However, research indicates that young trees are better able to sequester carbon at a faster rate than mature trees, and wood products can tie up that carbon for a long period of time. For these reasons, continuing to plant and harvest trees for long-lived wood products is a more effective practice to maximize carbon sequestration. Students may have a hard time seeing how cutting trees down can help sequester carbon. It is only when the wood is used for furniture or houses and the forests are replanted that this strategy helps reduce atmospheric carbon.