



Acterra

YOU(TH)
BE THE
CHANGE

SOLUTIONS



1

Program Recap
Post-program Survey

2

Solutions and Our Future


3

Volunteer Assignment
Next Steps



LESSON 6: SOLUTIONS

Time	60 Minutes
Next Generation Science Standards	<p><u>Next Generation Science Standards</u></p> <p>MS-LS2 Ecosystems: Interactions, Energy, and Dynamics MS-ESS3 Earth and Human Activity HS-ETS1-3 Engineering Design</p> <p><u>Disciplinary Core Ideas</u></p> <p>MS-LS4.D: Biodiversity and Humans Changes in biodiversity can influence humans’ resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. (secondary to MS-LS2-5)</p> <p>MS-ESS3.C: Human Impacts on Earth Systems Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-3), (MS-ESS3-4)</p> <p>MS-ESS3-D: Global Climate Change Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth’s mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities. (MS-ESS3-5)</p> <p>HS-ETS1.B: Developing Possible Solutions When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts. (HS-ETS1-3)</p>

Materials	<u>Session 6 PowerPoint Acterra's Climate Action Guidebook</u> 
Topics Covered	<ol style="list-style-type: none">1. Lesson 5 Review2. Program Recap3. Post-program survey4. Solutions and our future5. Volunteering Assignment <p>Enrichment: Ranges of Scales</p>
Learning Goals	<ol style="list-style-type: none">1. Identifying climate friendly personal choices2. Understand local and large-scale climate change mitigation tactics and adaptation tactics and the differences between them3. Creating climate action pledges4. Reviewing topics covered and learning accomplishments5. Cover science communication best practices and how to use it in your life and community

INTRODUCTION

Review vocabulary from previous lessons

Review activity:

Have students try to use as many words as they can in 1 or 2 paragraphs:

Carbon cycle, Atmosphere, Photosynthesis, Producers, Consumers, Decomposers, Carbon pools, Carbon source, Carbon sequestration, Fossil fuel, Greenhouse gas, Greenhouse effect, Carbon Dioxide (CO₂), Increased global temperatures, drought, climate vs. weather, Sea level rise, Adaptation, Mitigation, Adaptation strategy, Hard engineering, Soft engineering, Climate migrants, Carbon footprint, Animal agriculture, Large scale agriculture, Monoculture, Polyculture, Predatory birds, Composting, intentional irrigation, Food waste, soil health, Environmental justice, Climate justice, Science communication

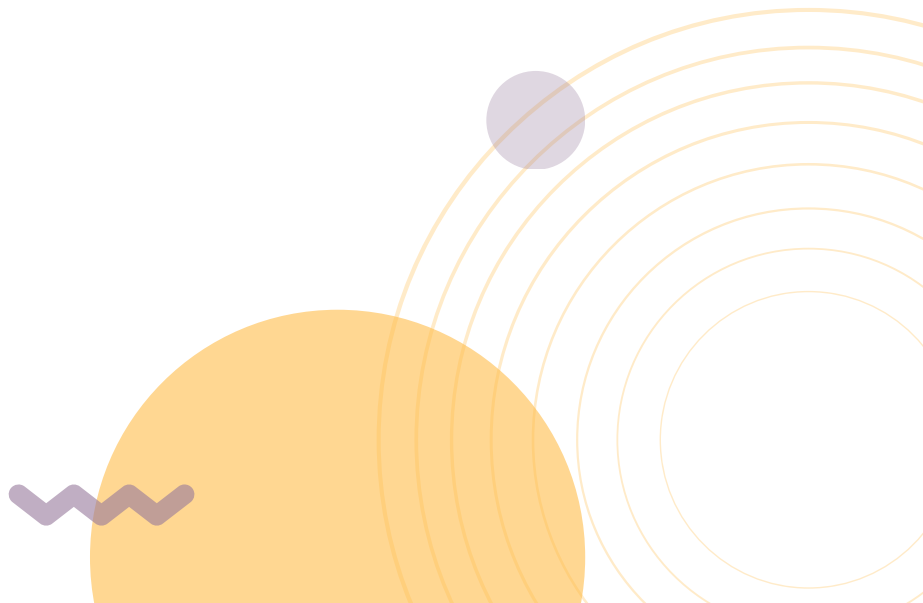
After the review, go over the agenda and begin the lesson.

Today's Agenda:

1. Lesson 5 Review
2. Program Recap
3. Post-program survey
4. Solutions and our future
5. Volunteering Assignment

Enrichment:

Ranges of Scales



PROGRAM RECAP

Engage Explore, Explain, Elaborate, Evaluate



#1 Lesson 1: The Carbon Cycle

Carbon is one of the building blocks of life. That means that its necessary for life on earth, it's in everything (the air, the water, the rocks, and all living things (plants and animals), and it's one of the most abundant elements on the planet.

1. Carbon cycles between the atmosphere, land, and ocean in different forms. There is carbon in plants, soil, air, and water.
2. Plants (producers) take up/absorb CO₂ through photosynthesis
3. Consumers eat the producers, and then break down the carbon in the producers. Consumers also respire (take in oxygen and release CO₂, breathing)
4. When producers and consumers die, they decompose and release CO₂ back into the atmosphere or are broken down by decomposers, which are bacteria or other organisms in the soil. Some carbon is released back into the atmosphere through this process and some is stored in the soil.

And round and round we go, from the air to the plants to the animals and the soil. Back into the air, to the plants, to the animals and the soil.

#2 Lesson 2: Impacts of Climate Change

1. Increased temperatures
2. Drought
3. Change in weather patterns
4. Sea level rise



PROGRAM RECAP (cont.)

#3 Lesson 3: Sea Level Rise

Sea level rise: an increase in the level of the world's oceans due to the effects of global warming. Sea level rise is caused primarily by two factors related to global warming:

1. The added water from melting ice sheets and glaciers (land based ice);
2. The expansion of seawater as it warms, and;

#4 Lesson 4: Agriculture and Food Systems

Animal agriculture contributes a lot more greenhouse gas emissions than plants. Producing meat, dairy, and eggs does not only require the land or water for those particular animals but also must include the water and land necessary to grow the food those animals eat.

Animal Agriculture is defined as the production of animal goods; such as meat, dairy, wool, and leather; is a multi-billion dollar per-year industry and accounts for over half of the value of U.S. agricultural products.

Food choice is an easy way to reduce your carbon footprint!

TO ACCESS THE FULL CURRICULUM,
PLEASE VISIT OUR PROGRAM
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