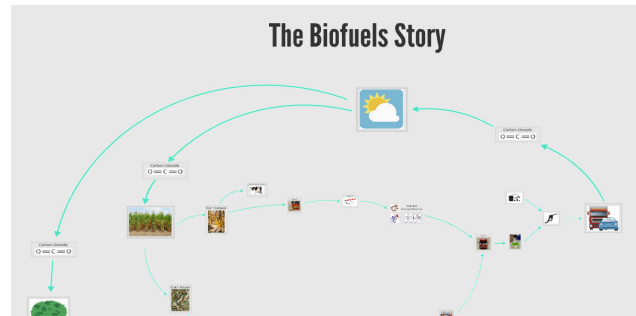




THE BIOFUELS STORY



Wall story version in classroom



Prezi presentation version online

Overview

Human energy use and biofuels and their role in managing global climate change are urgent current socio-scientific issues facing our society. The Next Generation Science Standards recommend that students learn about these about issues.* However, the story is complex and students will need multiple opportunities to work through it. The materials provided here provide a way to launch a study of biofuels. We recommend that you tell the story of biofuels and post a story wall in your classroom.

This combination of an oral story and pictures serves four functions:

- Students remember stories because they are coherent and connected to a plot line.
- The story wall can act as a reference for students as they work through multiple activities. (See final section)
- The story wall can act as a focal point for discussions and elaborations as students' knowledge grows.
- The combination of oral, written, and pictorial versions of the story provide students with multiple representations of the complex issue giving students with different learning skills access to the material.

Materials

- Biofuels Story powerpoint presentation
- Pictures from Biofuels Story presentation printed one slide per page. (It is helpful, but not necessary to have the pictures laminated or printed on card stock.)
- Biofuels Story Prezi online presentation: http://prezi.com/bbopmajuswpi/?utm_campaign=share&utm_medium=copy&rc=ex0share
- Biofuels Story script

Options for Using the Biofuels Story

1. Post the pictures as you tell students the story. You can tell the story in your own words, read the story from the script, or have the students read the script aloud.
2. Show the Prezi presentation of the story and have students read the captions aloud. Then recap the story as post the pictures on the story wall.

*NGSS Performance Expectations & Related Instructional Materials:

The Biofuels Story provides the background to launch into the study of biofuels with students and help them achieve the Next Generation Science Standards Performance Expectations listed below. Comprehensive curriculum materials, such as the *Biofuels vs Fossil Fuels* Unit, as well as shorter activities and investigations into biofuels can be downloaded here: <https://www.glbrc.org/education/classroom-materials>

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS2-3. Develop a model to describe the cycling of matter [carbon] and flow of energy among living and nonliving parts of an ecosystem.

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

HS-PS1-4. Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.

HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.

HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.

HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.