

PRE-READING: Fossil fuels, biofuels and the climate change problem

You can't go many places without seeing and hearing people motoring around in vehicles. These buses, cars, ships, planes, trains, motorcycles or trucks move people and stuff around town and around the world. All of these vehicles burn fuel to run.

These fuels, like gasoline and diesel, come from oil, which we pump out of the ground. Oil is made from the ancient, fossil remains of plants that lived millions of years ago. This is why we call oil a fossil fuel. Like plants today, the plants that made oil grew through the process of photosynthesis. They used the energy from light to combine carbon dioxide (CO_2) and water to build their leaves, stems, roots, etc. When some of these plants died, they were buried and over millions of years turned into oil. All of that carbon dioxide that built the ancient plants is now stored in the oil in the ground.

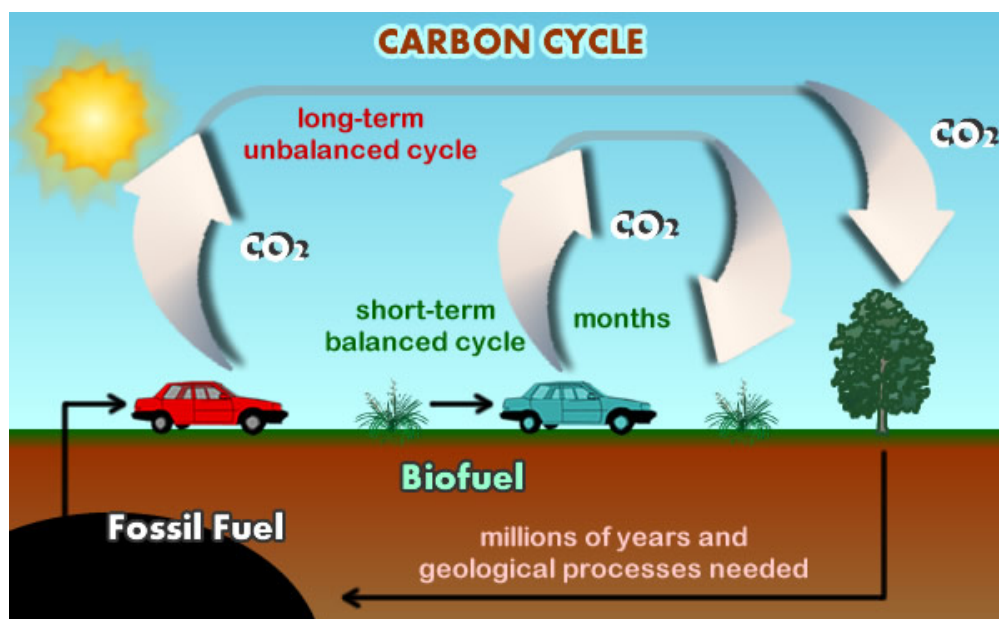


Figure 1: Biofuels vs fossil fuels - Follow the carbon! Source: Sue Hill, Michigan Technological University, <http://www.sfi.mtu.edu/FutureFuelfromForest/CellulosicEthanol.htm>

When a fuel, like gasoline, burns in a car's engine, the ancient carbon dioxide that was stored in the oil for millions of years is released back into the air. All of the vehicles burning fuel have added a lot of extra carbon dioxide to the atmosphere. Unfortunately, extra carbon dioxide is trapping heat in our atmosphere and causing global warming.

We can make fuels from plants today without waiting millions of years for them to turn into oil. Fuels made from recently living plants are called biofuels. When biofuels are burned in an engine, carbon dioxide is released just like when gasoline is burned. But unlike gasoline, the carbon dioxide from biofuels was absorbed by plants growing in the last year. This means that by using biofuels we can recycle carbon dioxide between plants and the atmosphere, rather than releasing more fossilized CO_2 from oil (Fig 1).

After reading: Answer these questions as instructed by your teacher.

1. What is a fossil fuel? List some examples.
2. What is a biofuel? List some examples.
3. How are fossil fuels and biofuels similar and different?
4. How could replacing fossil fuels with biofuels help with the climate change problem?