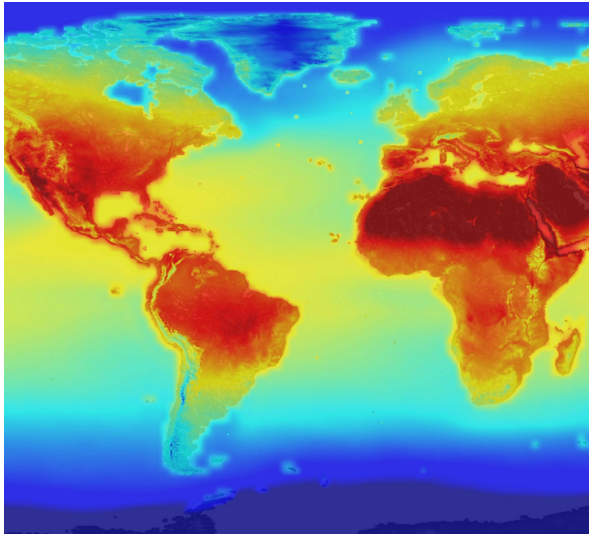


Science Virtual Learning

7th Grade Science

Causes of Climate Change

April 28, 2020





7th Grade Science Lesson: April 28

Objective/Learning Target:

I can identify some of the causes of climate change.

Warm-Up:

On a separate sheet of paper, write down what you think the difference is between “climate” and “weather”. Use [this](#) video to check your answer.



Practice

Please write down these definitions on a separate sheet of paper:

Weather--what the air around you is like on a particular day--sunny, rainy, dry, etc.

Climate--what the air around you is like typically over a long period of time (years and years). Do you live in a typically warm area? Do you live in an usually snowy area?

Climate change--when the usual, long-term air conditions for your area are changing. On Earth, temperatures in general are getting warmer.

Global warming--The mostly man-made rise in the Earth's average temperature



Practice continued

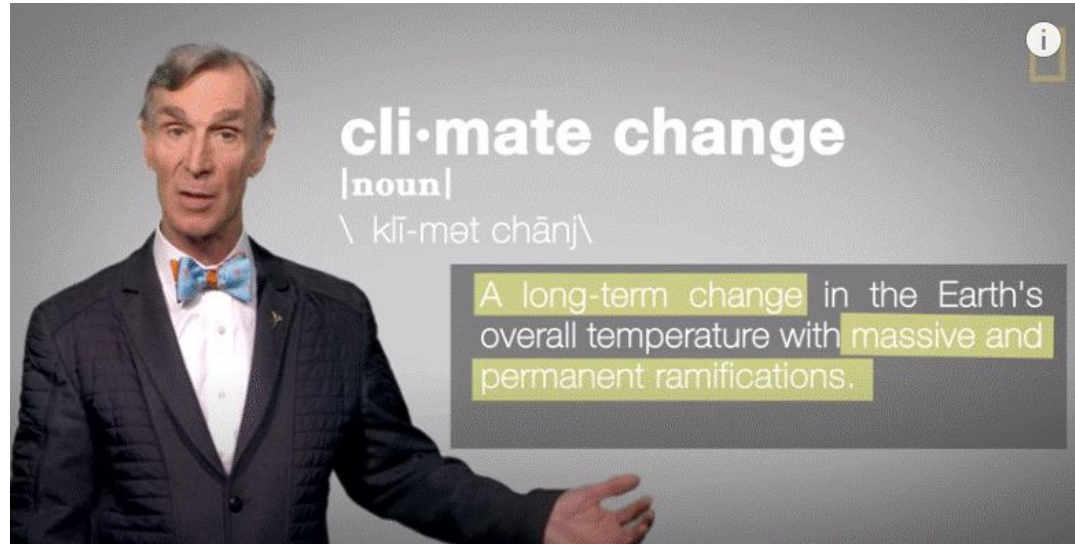
Watch this [video](#) with Bill Nye and answer the following questions on your sheet of paper:

1. How much warmer has the Earth's average temperature gotten in the last century?
2. What do 97% of climate scientist agree is causing climate change?
3. What is causing the increase in non-natural greenhouse gasses in our atmosphere, causing our planet's temperature to rise?
4. How are the oceans being affected in a negative way due to climate change?
5. Do scientists believe it is too late to reverse climate change?

Practice continued

Answers:

1. 1.2-1.4 degrees Fahrenheit
2. Human activities
3. The burning of fossil fuels
4. Rising temperatures, ocean acidification, rising sea levels, melting glaciers and ice sheets
5. No.





Practice continued

Write the following paragraph on your paper. You will need this as a reference in a moment:

What is Causing Global Warming?

Scientists believe that the release of greenhouse gases by human-related activities such as burning fossil fuels, like oil (which is used to make gasoline and diesel) and coal (mainly used to make electricity), is causing most of the warming. Another cause is cutting down forests, since trees soak up carbon dioxide, one of the greenhouse gases in the air.

Source: The California Air Resources Board




Practice continued

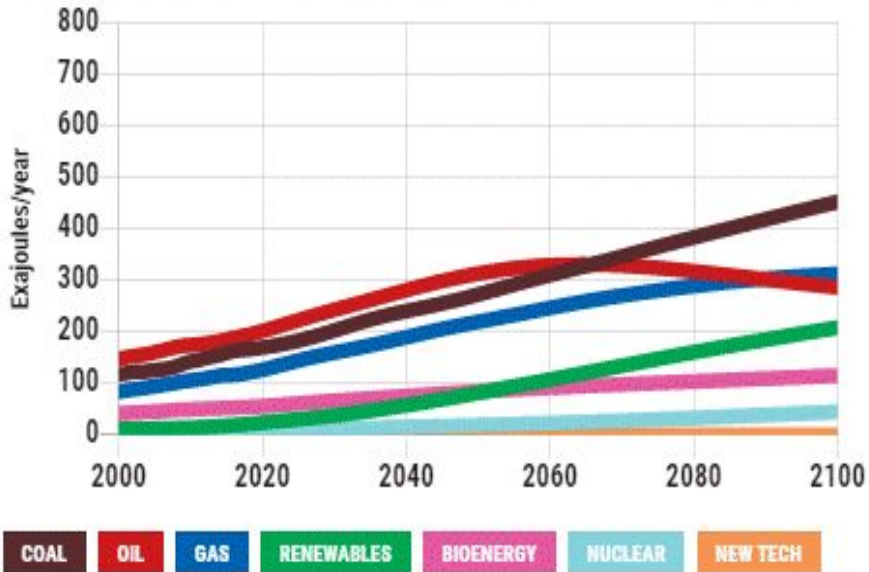
We are going to see which causes of climate change have the biggest impact over time, using this [simulator](#).

(continued on next slide)

Practice continued

Looking at the top, you can see our current sources of energy and how much we think we will be using in the future.

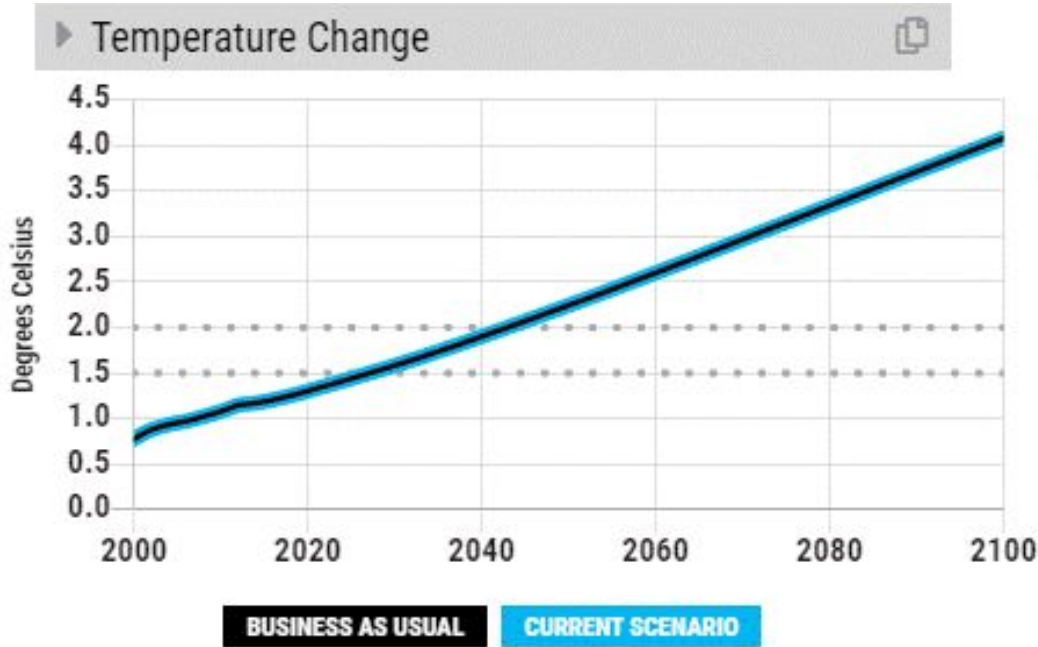
▶ Global Sources of Primary Energy 



Coal, oil and gas=fossil fuels, which increase greenhouse gases
Renewables=things like water power from dams, wind and solar
Bioenergy=comes from plant and animals, like crop wastes, algae, and food wastes. Ethanol is a biofuel.
Nuclear=comes from dividing atoms apart
 New technology=has not been invented or tested yet

Practice continued

You can also see the current rise in our planet's temperature and what could happen to it in the future.



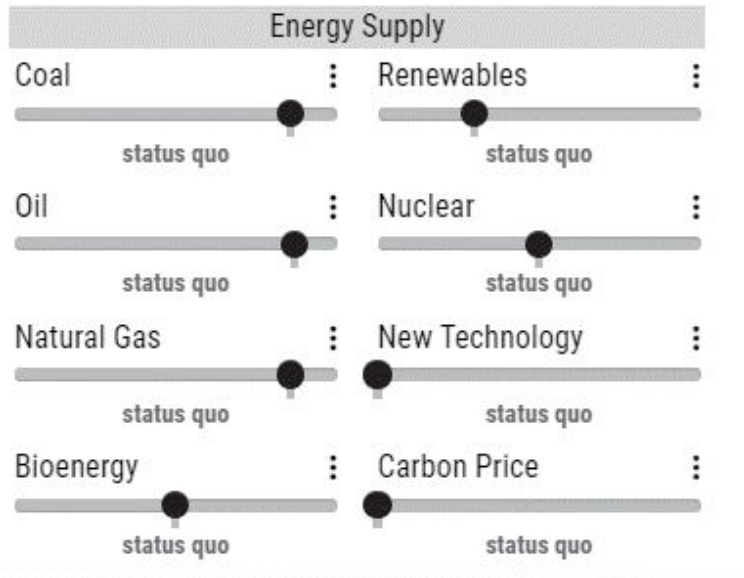
+4.1°C

+7.3°F

Temperature Increase by 2100

Practice continued

Let's look at the section on the bottom left first, called ENERGY SUPPLY. You can move the black dots as we change the possible ways our planet gets its energy. ("Status quo" means "how it is now"). On your sheet of paper, answer the following questions:



1. What happens to our planet's overall temperature in the future if you decrease the amount of coal, oil and natural gas we use?
2. What happens to our planet's overall temperature in the future if you increase the amount of renewable energy that is used?
3. What combination of things causes the greatest decrease to our overall temperature by 2100?



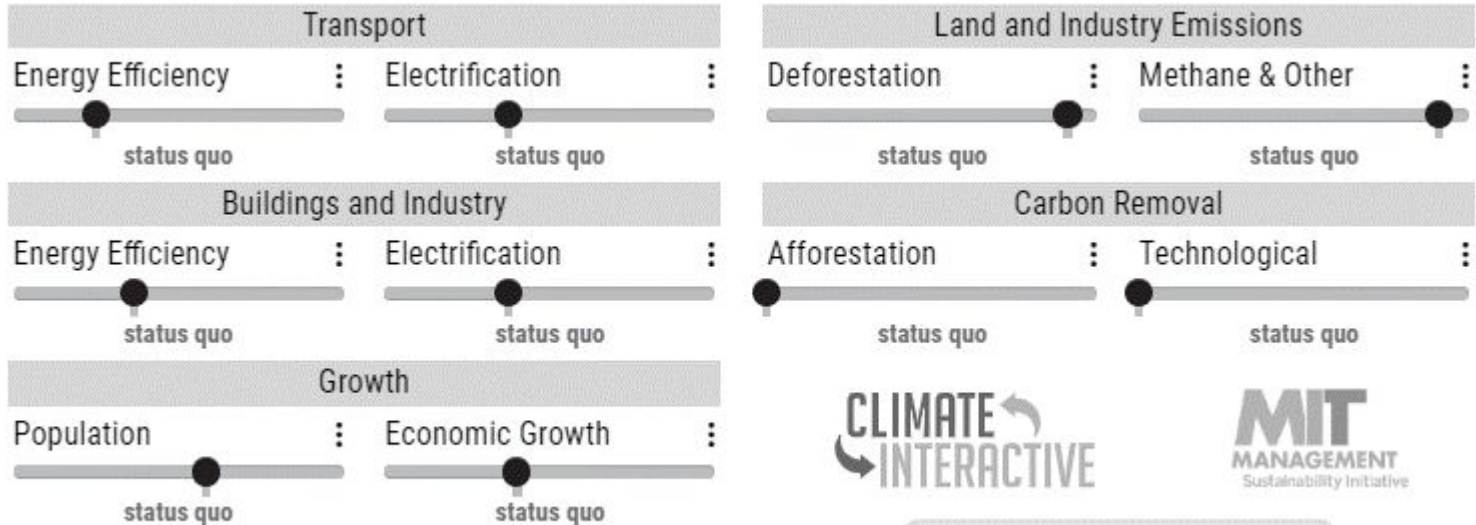
Practice continued

ENERGY SUPPLY ANSWERS:

1. The temperature in 2100 goes down.
2. The temperature in 2100 goes down.
3. If all three fossil fuels are used much less than today, and renewable/nuclear/biofuel/new technology are used at much higher rates than today, as well as carbon (gasoline) prices being very high, the overall temperature of the planet would go down significantly.

Practice continued

Now reset everything in the ENERGY SUPPLY section back to the status quo. Let's look at the middle and far right columns, that look like this:





Practice continued

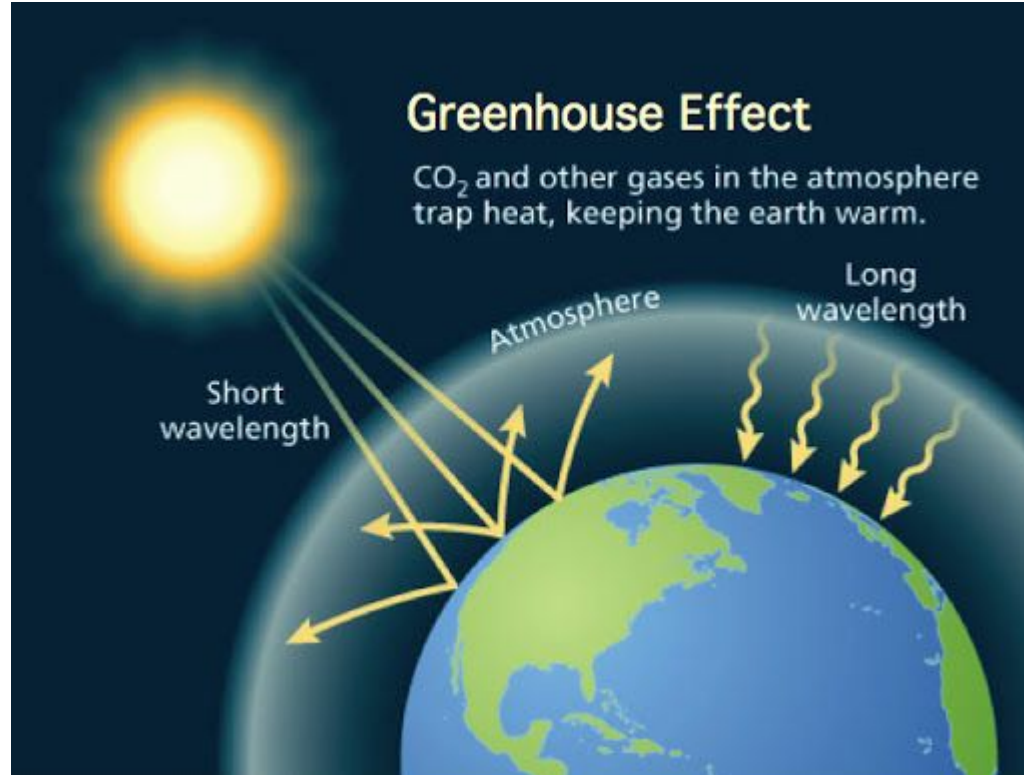
On your paper, answer the following questions:

1. Do we currently use very much electrification on our transport (aka do we have many electric cars)?
2. Currently, methane emissions (smoke from factories) is on the very high end. What happens if we reduce this?
3. Does the population of the planet seem to cause climate change?

Practice continued

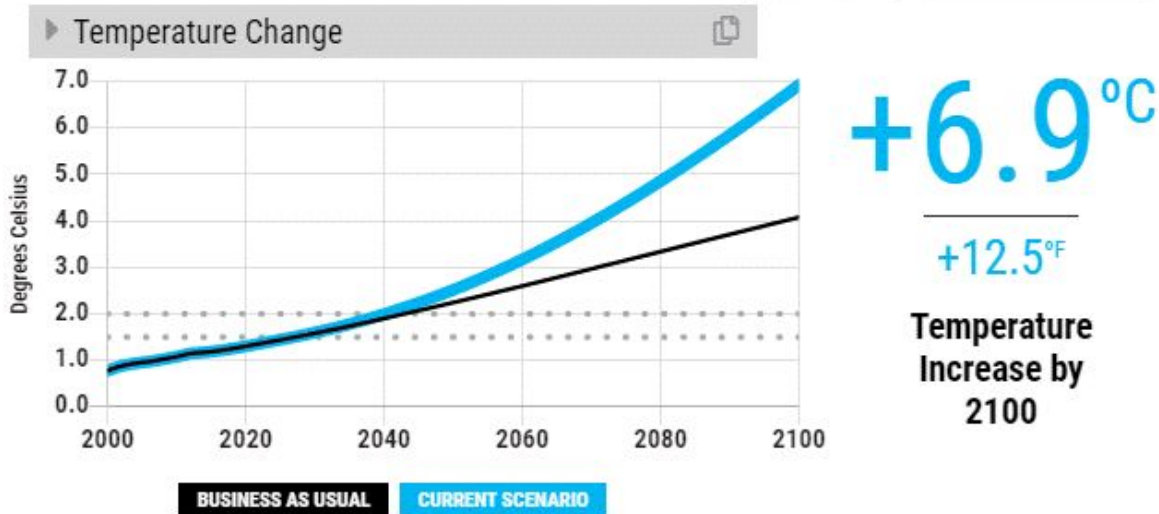
Answers:

1. No.
2. Overall temperatures would decrease significantly.
3. Yes

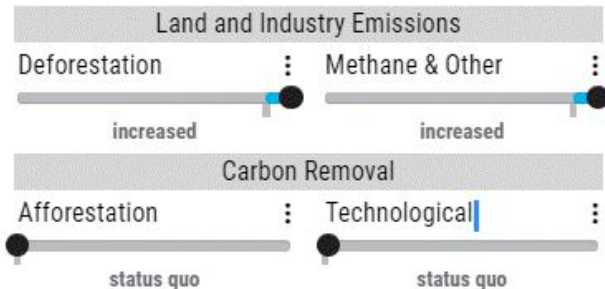
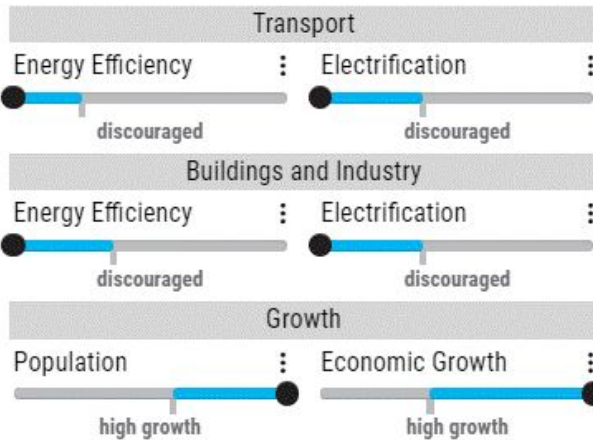
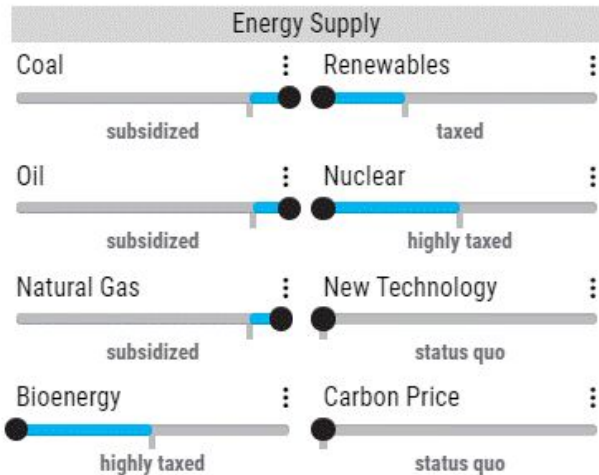


Practice continued

Finally, scientists believe that the Earth's temperature could raise 12.5 degrees Fahrenheit, or 6.9 degrees Celsius, in a worst case scenario. What would have to happen to raise the temperature to maximum? On your sheet of paper, list out five causes of this catastrophic change in climate.



Practice continued





Practice continued

Possible answers:

1. Continue to rely too heavily on fossil fuels
2. Not enough growth in nuclear, bioenergy, renewable energy, or new technologies
3. Not enough electrification or energy efficiency in our transportation and buildings
4. Too much population or economic growth
5. Continued high rates of deforestation and methane production
6. No afforestation (planting trees) or technology to remove carbon from the air

Practice continued

Finally, write a 3-5 sentence paragraph on what you feel is the biggest cause of climate change. Be sure to use some evidence to back up your claim. You can go back and look at any prior information presented in this slide, or use one of these websites for further resources:

[National Geographic Kids: Climate Change](#)

[American Museum of Natural History: Climate Change](#)

[NASA Climate Kids](#)

