

Brandon Valley School District  
District Learning Plan  
May 4-8, 2020

Grade 6 Science



## Brandon Valley School District Distance Learning Plan

LESSON/UNIT: Human Impact

SUBJECT/GRADE: 6th Science

DATES: May 4- 8



What do students need to do?  <a href="#"><u>Link to BV instructional video for week of May 4-8, 2020</u></a>	Monday (5/4): <b>Read</b> (NEWSELA- Humans may have exceeded their biological carrying capacity on Earth)  Tuesday (5/5): <b>Read</b> (NEWSELA- Understanding tropical deforestation)  Wednesday (5/6): Human Impact- <b>Cause and Effect Graphic Organizers</b> (Answer Document)  Thursday (5/7): <b>Read</b> (NEWSELA- Humanity will find ways to adapt to climate change)  Friday (5/8): <b>Prewriting and Response</b> (Answer Document)
What do students need to bring back to school?	Answer Document (Choose one way to submit from the list below) <ol style="list-style-type: none"> <li>1. Complete answer document by paper and pencil and submit to BVIS</li> <li>2. Complete answer document electronically through GOOGLE CLASSROOM</li> </ol>
What standards do the lessons cover?	MS-ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth’s systems. MS-ESS3-5 Ask questions to clarify evidence of the factors that may have caused a change in global temperatures over the past century
What materials do students need? What extra resources can students use?	Need: <ol style="list-style-type: none"> <li>1. Reading Passages Worksheet (PDF or Online)</li> <li>2. Answer Document (PDF or on Google Classroom)</li> <li>3. Paper and Pencil</li> </ol> Extra: <ol style="list-style-type: none"> <li>1. NEWSELA- Climate Change in the U.S Great Plains</li> <li>2. NEWSELA- Animal endangerment and its causes</li> </ol>
What can students do if they finish early?	<b>(Optional- Human Impact)</b> <b>Human Environmental Impact Awareness</b> <ol style="list-style-type: none"> <li>1. Create a list of ways Humans have caused Climate Change in our area</li> <li>2. Create a list of effects from climate change in our area</li> <li>3. Create a POSTER OR</li> <li>4. Write an awareness message on your driveway or sidewalk informing people on this topic</li> </ol> Extra Information- <i>NEWSELA- Climate change in the U.S. Great Plains</i>

Who can we contact if we have questions?	<b>Brandon Valley Intermediate School</b> <b>Principal-</b> Mr. Skibsted- <a href="mailto:Nick.Skibsted@k12.sd.us">Nick.Skibsted@k12.sd.us</a> <b>Assistant Principal-</b> Mr. Pearson- <a href="mailto:Rick.Pearson@k12.sd.us">Rick.Pearson@k12.sd.us</a> <b>Science Teachers:</b> Mr. Putnam- <a href="mailto:Mike.Putnam@k12.sd.us">Mike.Putnam@k12.sd.us</a> (blue team) Ms. Grieve- <a href="mailto:Tami.Grieve@k12.sd.us">Tami.Grieve@k12.sd.us</a> (silver team) Ms. Schindling- <a href="mailto:Kayla.Schindling@k12.sd.us">Kayla.Schindling@k12.sd.us</a> (red team) Mr. VanHeel- <a href="mailto:Jeremy.VanHeel@k12.sd.us">Jeremy.VanHeel@k12.sd.us</a> (white team)
<b>Notes:</b>	

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***Instructional materials are posted below (if applicable)***

*Brandon Valley School District*

# Humans may have exceeded their biological carrying capacity on Earth

By ThoughtCo.com, adapted by Newsela staff on 08.11.19

Word Count **680**

Level **840L**



Image 1. Passengers cram into subway cars during rush hour in New York City. Photo by: Robert Nickelsberg/Getty Images

A species is a group of organisms that can breed with each other and produce offspring. A species has many individual members. Biological carrying capacity is defined as the maximum number of individuals of a species that can exist in a habitat. They can exist there for an unlimited period of time. Also, they can do so without threatening other species. Many factors affect biological carrying capacity. These include the amount of available food and water. They also include the availability of cover and shelter. The presence of prey and predator species also affects biological carrying capacity.

When a species exceeds, or goes beyond, its biological carrying capacity, that species is overpopulated. This means that there are too many individuals of the species in a habitat. Overpopulation is a topic of much debate in recent years. That is because of the expanding human population. Some scientists believe that humans have already exceeded their biological carrying capacity.

## Environmental Factors Affect Carrying Capacity

The biology term "carrying capacity" was originally used to describe how much a species could graze on a piece of land. When the number of animals permanently damaged the land's ability to grow food, it meant that they had exceeded their carrying capacity. The term's meaning was expanded later. It now includes more complex interactions. One of these interactions would be predator-prey dynamics. Another would be how modern civilization has impacted native species.

However, competition for shelter and food aren't the only factors that determine a species' carrying capacity. That capacity also depends upon environmental factors. Sometimes, these are not caused by natural processes. For example, pollution is an unnatural environmental factor. It can affect carrying capacity. Another example is the extinctions of prey species caused by humans.

Ecologists and biologists now determine the carrying capacity of individual species by weighing all of these factors. These scientists use the resultant data to prevent species from overpopulating. They also use it to try to prevent species from going extinct. Either of these could be destructive to delicate ecosystems. The global food web could also be harmed.

### **What Happens When A Species Overpopulates**

Species tend to match the conditions of their environment. Those conditions include the presence of water, food, prey, predators, cover, etc. We call that match a niche. When a species exceeds its carrying capacity within its niche environment, that species is overpopulated in the area. Overpopulation can lead to destructive results. Fortunately, the natural life cycles of predators and prey normally keep these outbreaks of overpopulation under control, especially in the long term.

Sometimes, a certain species will overpopulate. This results in the devastation of shared resources. If this animal happens to be a predator, it might overeat the prey population. That leads to that prey species' local extinction. It also increases the reproduction of the predator species. On the other hand, if a creature of prey overpopulates, it might destroy all sources of edible vegetation. This results in a decrease in other prey species' populations since they have less vegetation to eat. Sometimes, the entire ecosystem risks destruction.

### **The Human Population Is Still Increasing**

Sometimes, ecosystems get very close to this destruction. One example is the human race. The human race is arguably overpopulated on Earth. By the end of the bubonic plague at the turn of the 15th century, the world's human population had decreased. Ever since then, however, it has been steadily and increasing. This increase has been most significant within the last 70 years.

Scientists have determined the carrying capacity of humans on Earth. It is somewhere between 4 billion and 15 billion people. Humanity's population is already in that range. In 2019, there are 7.7 billion people on the planet. The United Nations estimates an additional 3.5 billion population growth by the year 2100.

Humans are in a position where they have to work on their ecological footprint. An ecological footprint is the impact that a person or community has on the environment. Humans must work on their footprints if they hope to survive the next century on this planet.

# Understanding tropical deforestation

By NASA, adapted by Newsela staff on 03.13.17

Word Count **894**

Level **790L**



Two logging trucks on the Kalabakan-Sapulot-Road take heavy tropical timber logs to the log pond in Kalabakan, Indonesia. NASA

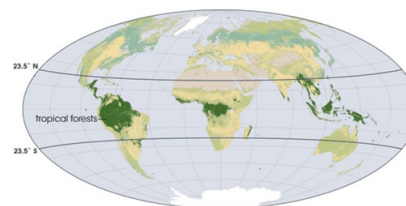
Tropical forests stretch out from the equator around the Earth. They are full of amazing diversity and productivity. They have plants and animals found nowhere else in the world.

Tropical forests are disappearing rapidly. Humans clear the land to make room for farms and pastures. They also harvest the wood and use the land to build roads and houses. Deforestation meets some human needs. It also causes big problems, though. These include climate change and extinction of plants and animals. These challenges are global.

## Causes Of Deforestation

People have been deforesting the Earth for thousands of years. Today, forests are cleared to harvest the wood and to use the land for farms, roads and buildings.

The biggest direct cause of tropical deforestation is turning the land into cropland and pasture. Countries also build roads to improve transportation



Tropical forests span both sides of the Equator, thriving in the warm, usually wet, climate, under the Sun's most direct rays. They are dark green on this map, while other biomes are lighter. Image by: Robert Simmon/NASA.

of goods. Building the roads causes some deforestation. The new roads also make it easier to reach forested lands. As a result, more people will enter to harvest timber. In some cases, it is the reason why the roads were built. When loggers have harvested all the wood in an area, they move on. The roads and the logged areas attract settlers. The settlers destroy the remaining forest for farms.

Poverty often drives people to migrate to the edge of the forest. There, they clear forests to farm. Tropical deforestation has many causes, though. There is more to it than poverty.

Governments cause deforestation with building projects. Things like increased demand for rainforest timber can also lead to deforestation.

New technologies make it easier to clear forests quickly. Meanwhile, old logging technology increases damage in surrounding forests.

### **Effects Of Deforestation**

Tropical forests probably contain about half of all kinds of plants and animals on Earth. Many can only be found in small areas. This makes them more likely to die out. In addition, the forest that remains is more dangerous for the plants and animals still there.

Rain forest products are popular around the world. These include fruit, nuts, timber, spices, natural oils and medicines. Without intact forest ecosystems, we would lose many of these products for good.

Biodiversity, a large variety of living things in a certain place, isn't just important for the forest. It is important for people too. Plants and animals in the rainforest may hold the cures for diseases and ways to improve the food we produce. Many of these plants and animals may not have even been discovered yet.

### **Effects On Soil**

With all the life in tropical forests, it may be surprising to learn that tropical soils do not have too many minerals. Heat and rain wash away the minerals over time.

When an area is completely deforested for farming, the farmer typically burns what is left. Minerals are lost. In just a few years, soils often become unable to support crops. Sometimes, the area is then turned into cattle pasture. This makes it nearly impossible for the area to be reforested.

Tropical forests are home to millions of native, or indigenous, peoples. Many of them rely on the forests. Their cultures and livelihoods often depend on having access to forests and forest resources. Deforestation in indigenous territories sometimes leads to conflicts. Governments in these countries face the challenge of balancing the needs of different people.

### **Rainfall And Temperature**

Much of the rain that falls in tropical forests is water that the rainforest has recycled into the atmosphere. Water evaporates, condenses into clouds and falls again as rain. This maintains



Tropical forests are home to an incredible variety of plants and animals like the squirrel monkey (left) and the red-eyed tree frog (right). Images from: Wikimedia.

tropical rainfall. Also, the evaporation cools the Earth's surface. Deforestation is likely to make the area drier and hotter. Tropical deforestation may also change rainfall pattern far outside the area.

Deforestation in tropical areas can increase the greenhouse effect and global warming. The trees and plants in the forests take in a lot of carbon. They do this during photosynthesis. They release carbon dioxide too, though. This happens in a process called cellular respiration. Also, carbon dioxide escapes when leaves and other matter break down naturally. When people clear the forests, carbon returns to the atmosphere much more rapidly.

### **Rates Of Tropical Deforestation**

The Food and Agriculture Organization (FAO) produces a global forest report. The FAO report is the most widely used measure of global forest health.

The report provides a grim picture. 500,000 square miles of forest disappeared between 1990 and 2015. That's nearly twice the size of Texas. The rate at which forest is lost has slowed down a bit in the last few years, though.

### **Sustaining Tropical Forests**

Forest communities are moving toward farming that is less harmful to the forest. Also, protected areas like parks and preserves can draw tourists and provide jobs and education for people there.

Parks and protected areas may have drawbacks, though. Scientists in the Amazon compared territories managed by indigenous people to parks and other protected areas. Territories managed by indigenous people saw far less deforestation. These territories may work better than parks alone.

Finally, sustainable products are increasing in value. This may give landowners reasons to adopt more forest-friendly practices. Governments also have a reason to work harder to protect the forest.

More countries are beginning to seriously address environmental issues like global warming and maintaining biodiversity. This could be good news for tropical rain forests.



LEFT: Açaí fruit is a renewable resource that can provide a livelihood for harvesters without damaging the Amazon Rainforest. Photo: Ricardo via Getty Images. RIGHT: An Indigenous community met with the Brazilian government in June 2013. They were protesting the construction of a dam that environmentalists and indigenous groups said would devastate the environment and the livelihoods of people who live in the area. Photo: AP Photo/Eraldo Peres



# Humanity will find ways to adapt to climate change

By The Economist, adapted by Newsela staff on 03.01.20

Word Count **816**

Level **880L**



Image 1. A movable system, the Thames Barrier on the Thames River in London, England, was made to stop the surrounding areas from being flooded because of high water levels. Photo: Andy Roberts/Wikimedia Commons

*Editor's Note: The opinions in this essay are those of the writer and do not necessarily represent the views of Newsela or its editors. Political language, word choice and position belong to the author alone.*

Destructive storms are becoming more common because of climate change. After these storms tear through an area, the people affected must make important decisions. Should they put money into developing better drainage? Should they rebuild with stronger design and materials, or should they just move? The weather will certainly get worse in the future. This will mean higher seas, fiercer storms and more rain. People will have to adapt in order to reduce the human and economic costs of the changing climate. However, any large-scale adaptations will cost money. This spending makes the politics of the issue even more difficult.

Efforts to slow global warming have been met with political difficulties. Tackling climate change will be expensive and bothersome. The benefits of reduced warming may not be seen for centuries.

The term "mitigation" refers to efforts to curb emissions.

## **Carbon Emissions**

Carbon emissions are to blame for much of global warming. Some carbon emissions happen naturally. Decomposition is one way. But much is caused by burning fossil fuels such as gas, oil and natural gas. Cutting down forests is another.

Mitigation of emissions has been slowed by how individual and group actions are viewed. Individuals may feel that their own actions do not matter much. Some people think they do not have to make sacrifices because other people are already doing so. For example, a person may decide that driving to work is OK because other people are taking public transportation.

Adaptation, though, can pay off even when a person acts out of pure self-interest. Homeowners spend money on energy-efficient heating in order to benefit from lower gas and electric bills. There are no political problems to untangle. Government actions are only slightly more complicated. They need political agreement to spend public money on environmental projects. However, the people paying for these improvements are often the ones who are benefiting.

All this means that adaptation is likely to play a large role in humanity's response to climate change. Indeed, people already react to extreme weather events. This is clear from the fact that purchases of air-conditioners rise after heat waves. Some individuals may adapt by choosing to take a job in a place with less extreme weather. A few cities are making more obvious adaptations. They are building defenses against floods and sea rise.

## **Increased Demand**

Eventually, there will be an increased demand for ways to ease the pain of climate change. There will be a growing market for goods. This will force producers to come up with new products. The market for better means of coping with climate change is already growing daily.

There are economic reasons to adapt to climate change. Experts predict that floods will negatively affect the economy. They will cause the global GDP — basically the combined amount of money that all the countries in the world make in a year — to drop by 4.5 percent by 2200. However, if people adapt properly, the loss drops to just 0.11 percent.

One suggestion for adaptation is making infrastructure climate-proof. Infrastructure includes roads, ports, electricity, sanitation, sewer and communications systems. Protecting water resources is another way of adapting. Improving water use in irrigating farmland in dry areas is yet another.

Still, adaptation has its drawbacks. Investments in adaptation will soften the effects of climate change. However, they could also reduce the desire for spending on mitigation. Laws to reduce carbon emissions will result in cost and inconvenience for nearly everyone. Many people may dislike these laws. Investments in adaptation will reduce the likelihood or severity of future environmental dangers. At the same time, however, they may undercut the case for accepting the hardship of decarbonization. The longer governments fail to act to curb warming, the more people and companies will spend to safeguard themselves. This will mean they are less troubled by governments' failures to decarbonize.

## **Some Areas Cannot Adapt Easily**

Even if some people can adapt to a warmer world, it is still a big problem. Some areas cannot adapt as easily as others. North America and mainland Europe both have relatively steady climates. Rich people in these areas have money to spend on adaptation. They can move from the worst-hit spots somewhat easily. Poor people have little spare cash, mostly live in hotter places and face more hardships when they try to migrate.

In mitigation, the steps rich countries take to help themselves also help poorer ones. These poorer nations are less responsible for global warming. They also feel its effects more strongly. Richer countries must realize having the money to shield themselves from the effects of global warming doesn't mean they shouldn't help poor countries. In fact, they should help more.

**Distance Learning - 6th Grade Science - May 4th- May 8th**

**Monday, May 4- Read**

**(NEWSELA- Humans may have exceeded their biological carrying capacity on Earth)**

**Tuesday, May 5- Read**

**(NEWSELA- Understanding tropical deforestation )**

**Wednesday, May 6- (Cause and Effect Graphic Organizers)**

**Directions- After reading the articles complete the cause and effect graphic organizers.**

<b>CAUSE- OVERPOPULATION (Article from Monday)</b>		
<b><u>EFFECT 1</u></b>	<b><u>EFFECT 2</u></b>	<b><u>EFFECT 3</u></b>

<b>CAUSE- DEFORESTATION (Article from Tuesday)</b>		
<b><u>EFFECT 1</u></b>	<b><u>EFFECT 2</u></b>	<b><u>EFFECT 3</u></b>

**Thursday, May 7- Read (NEWSELA- Humanity will find ways to adapt to climate change)**

**Friday, May 8- (Prewriting and Response)**

Directions- *Identify the problem and solution in Thursday's article. Next, write a paragraph explaining what the problem is and why it matters, using examples, facts, and details from the text. If possible, describe any solutions proposed in the text. Make sure to use capital letters, punctuation, and complete sentences. Your answer should be one paragraph long.*

<b>Problem</b>	<b>Solution</b>

Writing: