

HUMAN GROWTH POPULATION IMPACT ON EARTH'S RESOURCES

Science Reading



Topics Included

- ✓ Human population growth
- ✓ Per-capita consumption
- ✓ Impact of human consumption on Earth

Each topic *includes*

- ✓ **One page science reading passage to teach the topic.**
- ✓ **Notes with questions to guide their reading**
- ✓ **Comprehension worksheets to review the information using multiple levels of questioning**
- ✓ **Task cards to extend their learning and for extra review**
- ✓ **Answer keys to easily check the student knowledge**
- ✓ **Digital version for more flexibility on how to use the lesson**
- ✓ **Lesson Design to help you differentiate the lesson in your classroom**

The image displays a collection of educational resources for a lesson on per-capita consumption. It includes:

- Worksheet:** A page titled "Per-Capita Consumption" with a "Define / Describe:" section containing three questions: "1. What does 'per capita' mean?", "2. What do people in wealthier countries tend to use more of?", and "3. What is a carbon footprint?". An "Interpret:" section contains a fourth question: "4. India has a population of about 1.4 billion people, and the United States has about 330 million. Based on the graph, how does India's energy use per person compare to the United States, and what does this tell us about total energy demand and resource use?". Below the text is a line graph titled "Energy use per person" showing data for the United States and Canada from 1980 to 2010. The graph shows a general upward trend for both countries, with the US consistently having higher energy use per person than Canada.
- Notes:** A notebook page with a header "Per-Capita Consumption" and a question "How does an individual's consumption affect the Earth?". The page is filled with horizontal lines for writing.
- Digital Version:** A tablet displaying a presentation slide titled "Human population impact on Earth's resources digital reading". The slide content mirrors the worksheet, including the "Define / Describe:" and "Interpret:" sections, the graph, and additional text explaining per-capita consumption and its environmental impact. The slide also includes a "Notes" section with questions and "Add text" boxes for student input.

HUMAN GROWTH POPULATION IMPACT ON EARTH'S RESOURCES

Science Reading

Impact of Human Consumption on Earth

Climate Humans depend on Earth's systems for everything we need—water, air, land, and life. However, these systems are changing as the population grows and people use more natural resources. Earth has four major systems that work together: the hydrosphere (water), the geosphere (land and rock), the atmosphere (air), and the biosphere (all living things). Each system is affected by human activity in different ways.

The hydrosphere includes oceans, rivers, lakes, and underground water. Some water sources are drying up as people use more water for drinking, farming, and factories. This is called depletion, which means using something faster than it can be replaced. In places with little rain, rivers and lakes are shrinking. For example, Lake Mead in the United States has dropped to record-low levels due to overuse and drought, exposing dry lakebeds where water once flowed (Description 1). Farmers may use wells to pump water from the ground, but if they take too much, groundwater can run out, or sinkholes may form—the appearance of the land changes as lakes disappear and dry riverbeds replace flowing streams.

Diagram 1: The white "bathtub ring" along the canyon walls marks where the water used to reach at Lake Mead. Years of drought and heavy water use have caused the lake's water level to drop to historic lows. This is a clear example of water depletion in the hydrosphere caused by both climate and human activity.



The geosphere is made up of Earth's solid surface—soil, rocks, and landforms. People dig deep into the ground to get materials like metal and fuel. This process, called mining, can damage the land and leave behind large holes or waste piles (Description 2). For example, in places like the Appalachian Mountains in the United States, mountaintop removal mining has flattened parts of the mountains and filled nearby valleys with debris. Building roads and cities also changes how land is used. The land's structure is changed when forests or farmland are replaced with concrete and buildings. Without plants to hold the soil in place, erosion can wash the soil away. This not only changes how the land looks but how fast it wears down over time.

Diagram 2: Mountaintop mining removes entire sections of mountains to reach coal beneath the surface. This process leaves behind flat, damaged land and pushes rock and waste into nearby valleys. It's a powerful example of how mining can change the structure and appearance of the geosphere.



The atmosphere is the layer of gases surrounding Earth and giving us the air we breathe. Activities like driving cars, using electricity, and running factories—release gases and pollutants. One of the most important gases is carbon dioxide, which traps heat and causes the Earth to warm. This is called global warming. It can lead to rising temperatures, changing weather patterns, and stronger storms. As more greenhouse gases are added, the composition of the atmosphere changes.

The biosphere includes all Earth's plants, animals, and people. When humans clear forests for agriculture, build cities, and pollute rivers and oceans, it harms the living parts of the planet. Deforestation—cutting down trees—removes the shelter and habitat that animals need for shelter and that humans need to help clean the air. Pollution and land use changes can lead to species loss, where certain plants or animals disappear forever. As more land is used for agriculture, the biosphere changes faster than it can recover.

Together, these changes affect how Earth looks, works, and changes quickly. That's why it's important to understand how human actions impact the hydrosphere, geosphere, atmosphere, and biosphere. We need to find better ways to care for our planet.

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Impact of Human Consumption on Earth

...or Earth systems? _____

...pletion mean? _____

...effect? _____

...ties and differences between the impact of human consumption on the geosphere?

...osphere

...geosphere

...in some places? _____

...the composition of the atmosphere? _____

...location ...re a forest was. How would this affect the _____

What Are *students* Doing?

- ✓ **Marking the text**
- ✓ **Filling in the guided note-taking template**
- ✓ **Reviewing and applying their knowledge**
- ✓ **Reinforcing their understanding**

HUMAN GROWTH POPULATION IMPACT ON EARTH'S RESOURCES

Science Reading

Human Population Growth

Define / Describe:

1. What is population growth?
2. What is urbanization?
3. What is deforestation?
4. What are some sources of air pollution?

Compare:

5. What are some similarities and differences between deforestation and urbanization?

deforestation

Elaborate / Extend:

6. Explain how urbanization changes the land.
7. How does deforestation contribute to air pollution?
8. Why do you think deforestation and urbanization are related?

Human Population Growth

The number of people living on Earth keeps getting bigger. This increase is called population growth. A population is the total number of people in a certain area, like a town, country, or the whole planet. Scientists measure population growth by comparing the number of people born to those who die each year. If more people are born than die, the population grows. Over time, Earth's population has grown very quickly. In the year 1900, about 2 billion people were on the planet. Today, there are more than 8 billion. That means the population has more than tripled in just over 100 years. This fast growth greatly affects how we use the land, water, and other resources around us.

As more people are added to the planet, they all need natural resources to live. People need land for homes and farms, water for drinking and growing food, energy to power lights and cars, and food to stay healthy. More people using resources means we take more from the Earth, sometimes faster than nature can keep up. When resources are used too quickly, it can lead to shortages, like water running low in dry regions or farmland that can't produce enough food. This means more mining, drilling, and building—activities that can damage the environment.

Another big change is deforestation. People often cut down trees to make space for new buildings or get wood for construction and fuel. Deforestation removes important plant life and takes away homes for animals. Without trees, the land can become dry and more likely to erode. Forests also help clean the air, so losing them can lead to more pollution and hotter temperatures in nearby areas.

Pollution is also a growing problem. More people using cars, electricity, and factories create more waste. Smoke from cars and power plants pollutes the air (Diagram 2). Trash and chemicals can pollute rivers and oceans. Even the noise and lights from busy cities can affect animals and people who live nearby.

Diagram 2: Large cities often produce pollution from cars, factories, and power plants. This pollution releases gases like carbon dioxide into the air, which can lead to smog and contribute to global warming.

Population growth brings many challenges. As more people share the planet, we need to think carefully about how we use its resources and how to reduce the harm caused by urbanization, deforestation, and pollution.

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Different ways to use the *science readings*

- Substitute plan on days you will be out
- Introduction of the material at the beginning of the unit
- During the explain phase of the 5E model
- As part of a science station
- For reteach to reinforcing their understanding
- During the review at the end of the unit

Why? SCIENCE READING PASSAGES?

- ✓ Increase science literacy in the classroom
- ✓ Simple passages to help students comprehend the information
- ✓ Note-taking template to help students interact with the reading
- ✓ Worksheets to review and apply their knowledge
- ✓ Reinforcement task cards to continue their understanding



“My students and I absolutely loved this resource!!! The way this was planned out with the reading, diagrams, and questions was perfect. I mainly used this with my students but they used it one day with a substitute and they wrote to tell me how great it was! (I think they thought I created it so I have to tell them otherwise!)” -

Nicole

HUMAN GROWTH POPULATION IMPACT ON EARTH'S RESOURCES

Science Reading

Per-Capita Consumption **Possible Answer Key**

Define / Describe:

1. What does "per capita" mean? *Per capita means "per person."*
2. What do people in wealthier countries tend to use more of? *Electricity, cars, and meat.*
3. What is a carbon footprint? *It is the total amount of carbon dioxide (CO₂) released by a person or group.*

Per-Capita Consumption

When we think about how humans use Earth's resources, it's easy to focus on population size—how many people live on the planet. But another important factor to consider is how much each person uses. This is called per-capita consumption.

The word per capita means "per person." So, per-capita consumption is the average amount of natural resources one person uses. These resources include things like energy, water, food, and materials such as wood, plastic, and metals. Even if two countries have the same number of people, they might not use the same amount of resources per person.

For example, in wealthier countries, people tend to use more electricity, drive more cars, and eat more meat, which requires more energy and land (Diagram 1). In the United States, many people live in large homes, own more than one car, and eat high-energy foods like beef, which takes a lot of water and land to produce. In Canada, long winters lead to high heating needs, and people often travel long distances by car. Australia also uses a lot of energy per person due to frequent air conditioning and long-distance transportation. In other parts of the world, like India or Nigeria, people often walk or bike more, live in smaller homes, and use fewer appliances. Many families grow some of their own food and use less electricity. This means that although these countries have larger populations, their per-capita consumption is much lower. So, even with fewer people, a country like the United States can have a bigger environmental impact because each person uses more resources on average.

Diagram 1: People in countries like the United States and Canada use much more energy per person compared to people in countries like India or Nigeria. Higher per-capita energy use often means more electricity, fuel, and resources are used for things like transportation, heating, and appliances. These differences help explain why some countries have a bigger impact on the environment, even with smaller populations.

Energy use per person
Measured in kilowatt-hours per person. Here, energy refers to primary energy* using the substitution method.

Data source: U.S. Energy Information Administration (2012). Energy Indicators - Statistics on our world. Available at: www.eia.doe.gov or www.worldometers.info (CC BY)

Using more resources per person increases the carbon footprint. A carbon footprint is the total amount of carbon dioxide (CO₂) released into the air by a person or group. Driving cars, heating homes, and eating meat all release CO₂ into the atmosphere. More CO₂ emissions add to the greenhouse effect, which causes global warming and climate change.

High per-capita consumption also affects other parts of Earth's systems. In the biosphere (the part of Earth where living things exist), more land is needed for raising animals, especially cows, which are a major source of meat. These animals also release methane, a greenhouse gas that contributes to global warming (Diagram 2). In the geosphere (Earth's solid outer layer), mining and building create extra waste and use up land and materials that cannot be easily replaced. In the hydrosphere (Earth's water), more people use water for showers, food, and factories, which can pollute rivers, lakes, and aquifers. In some places, freshwater sources are shrinking faster than they can be replenished. These changes can lead to long-term damage affecting people and the environment.

Diagram 2: Raising more cows for meat production takes up large areas of land that were once forests or grasslands. These animals also release methane, a greenhouse gas that adds to global warming.

When one person uses a lot of resources, the impact may seem small. But when millions of people each use a lot of resources, the effects add up quickly. That's why understanding per-capita consumption is so important—it helps us see how our daily choices, even by one person, can affect the entire planet.

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Check out what teachers just like you have said about the science reading products:



"I love using reading passages in my science classes because I am able to reinforce all the learning strategies they have learned in the past and give the students more understanding of the information provided." – Suzzane



"I was really glad to find a bundle that included so many of our objectives since we do not have a curriculum" – Amanda



"This article kept my 8th graders engaged while reviewing this topic" Brower Power Science

HOW TO USE THE RESOURCE IN

3 simple steps

1

Print the PDF version, make copies, and hand out to students

2

Use the digital version by clicking the titles in the RED BOX to make your own copy (found at the end of the PDF)

3

Share the resource with your students using your favorite LMS (Google Classroom, Powerschool (schoolology), Canva...)

Interactive Digital Flip Book

Teachers Guide

What You Will Need To Get Started:

1. Download link for the Google Resource by clicking on the titles in the red box

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Directions: 1. Read the information on the left. 2. Use the red circles on the left to identify keywords. 3. Answer the questions by putting answers into the key details on the left. 4. Write a one sentence synthesis statement explaining the text's big idea.

TOPIC	GUIDING QUESTION
Impact of Human Consumption on Earth	How does human consumption of resources affect Earth?

Climate Humans depend on Earth's systems for everything we need—water, air, land, and life. However, these systems are changing as the population grows and people use more natural resources. Earth has four major systems that work together: the hydrosphere (water), the geosphere (land and rock), the atmosphere (air), and the biosphere (all living things). Each system is affected by human activity in different ways.

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Diagram 1: The white "bathtub ring" along the canyon walls marks where the water used to reach at Lake Mead. Years of drought and heavy water use have caused the lake's water level to drop to historic lows. This is a clear example of water depletion in the hydrosphere caused by both climate and human activity.

The geosphere is made up of Earth's solid surface—soil, rocks, and landforms. People dig deep into the ground to get materials like metal and fuel. This process, called mining, can damage the land and leave behind large holes or waste piles (Description 2 on the next slide). For example, in places like the Appalachian Mountains in the United States, mountaintop removal mining has flattened parts of the mountains and filled nearby valleys with debris. Building

QUESTION	KEY DETAILS
How is the hydrosphere affected by human consumption?	Add text

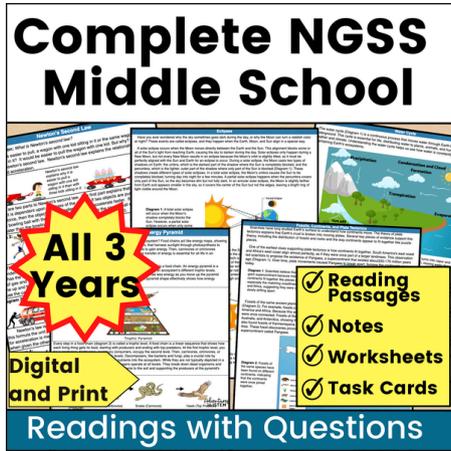
SYNTHESIS SENTENCE: (BIG IDEA OF THE TEXT IN ONE SENTENCE)

Add text

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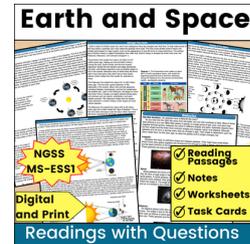
- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Readings with Questions

Earth Science Standards

Earth and Space



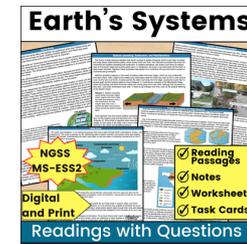
NGSS MS-ESS1

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Readings with Questions

Earth's Systems



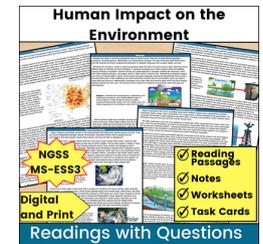
NGSS MS-ESS2

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Readings with Questions

Human Impact on the Environment



NGSS MS-ESS3

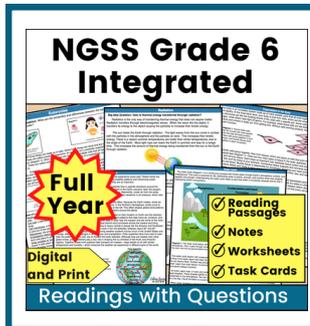
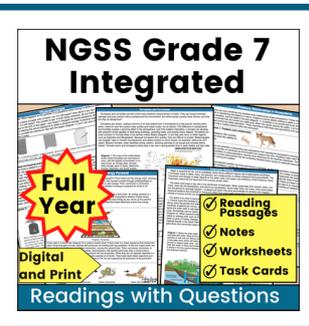
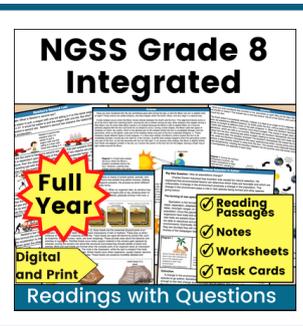
- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

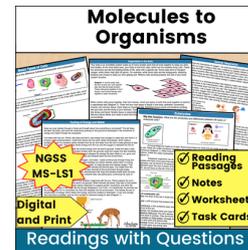
Readings with Questions

Life Science Standards

Integrated Model by Grade Level

<h3>NGSS Grade 6 Integrated</h3>  <p>Full Year</p> <ul style="list-style-type: none">✓ Reading Passages✓ Notes✓ Worksheets✓ Task Cards <p>Digital and Print</p> <p>Readings with Questions</p>	<h3>NGSS Grade 7 Integrated</h3>  <p>Full Year</p> <ul style="list-style-type: none">✓ Reading Passages✓ Notes✓ Worksheets✓ Task Cards <p>Digital and Print</p> <p>Readings with Questions</p>	<h3>NGSS Grade 8 Integrated</h3>  <p>Full Year</p> <ul style="list-style-type: none">✓ Reading Passages✓ Notes✓ Worksheets✓ Task Cards <p>Digital and Print</p> <p>Readings with Questions</p>
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Molecules to Organisms



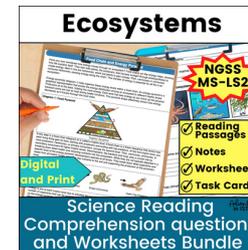
NGSS MS-LS1

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Readings with Questions

Ecosystems



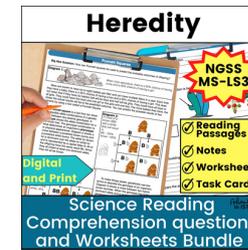
NGSS MS-LS2

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Science Reading Comprehension questions and Worksheets Bundle

Heredity



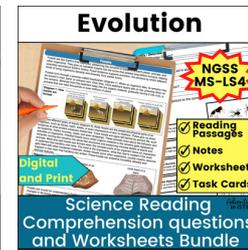
NGSS MS-LS3

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Science Reading Comprehension questions and Worksheets Bundle

Evolution



NGSS MS-LS4

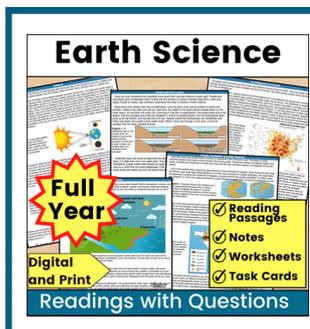
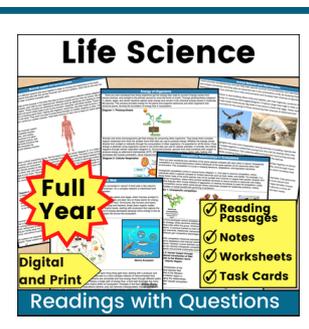
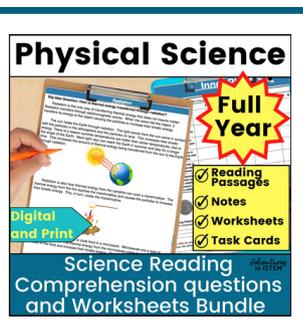
- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

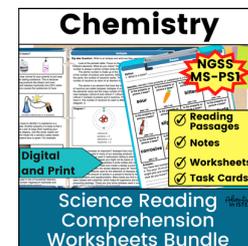
Science Reading Comprehension questions and Worksheets Bundle

Physical Science Standards

Alternative Model by Topic

<h3>Earth Science</h3>  <p>Full Year</p> <ul style="list-style-type: none">✓ Reading Passages✓ Notes✓ Worksheets✓ Task Cards <p>Digital and Print</p> <p>Readings with Questions</p>	<h3>Life Science</h3>  <p>Full Year</p> <ul style="list-style-type: none">✓ Reading Passages✓ Notes✓ Worksheets✓ Task Cards <p>Digital and Print</p> <p>Readings with Questions</p>	<h3>Physical Science</h3>  <p>Full Year</p> <ul style="list-style-type: none">✓ Reading Passages✓ Notes✓ Worksheets✓ Task Cards <p>Digital and Print</p> <p>Science Reading Comprehension questions and Worksheets Bundle</p>
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Chemistry



NGSS MS-PS1

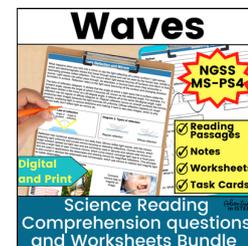
- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Science Reading Comprehension Worksheets Bundle

Chemistry also includes thermal energy

Waves



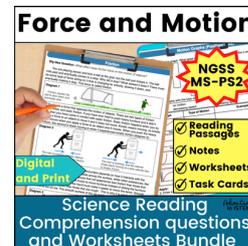
NGSS MS-PS4

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Science Reading Comprehension questions and Worksheets Bundle

Force and Motion



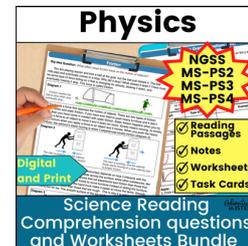
NGSS MS-PS2

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Science Reading Comprehension questions and Worksheets Bundle

Physics



NGSS MS-PS2, MS-PS3, MS-PS4

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

Digital and Print

Science Reading Comprehension questions and Worksheets Bundle

Physics includes mechanical energy



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