

Quick Trip to 7.6 Billion: Report Card for the Planet



Introduction

Since humans have inhabited the planet, people have been altering the world in order to make communication and transport easier, food more plentiful, water more accessible, and lives healthier and happier. Due to advances in all of these areas, we've grown to a global family of 7.6 billion members. We've come a long way in our ability to live longer, produce more and travel the globe, but with the world getting ever more crowded, it's important to think critically about the progress we've made. Are we all equally benefiting? Do our successes have any drawbacks? How can we continue to make changes to our world in a sustainable way? As we answer these questions, we can make a plan to move forward – one that is fair to everyone in our global family and accounts for the impact of our actions.

Materials

- *A Quick Trip to 7.6 Billion* poster or e-poster
- Student tablets or computers with Internet access
- Student Worksheet
- Reporting Cards (provided)

Procedure

1. Before class, print and cut out a set of Reporting Cards for each student.
2. Direct students to the *A Quick Trip to 7.6 Billion* poster found at www.worldof7billion.org/high-res-wall-chart.
3. If this is the first time students are viewing the poster, they should spend some time reading through the text on both sides and interpreting the charts and graphs.
4. Distribute a copy of the Student Worksheet to each student. Tell students that they will be using the information on the poster (both sides) to decide whether the environmental and quality of life indicators listed on the Worksheet have increased or declined since 1800.
Note: Not all of the indicators can be directly found on the poster. Students will need to use the information from the poster to infer the status of some indicators.
5. In the "Status" column, students should write an ↑ for

Concept

Global indicators of environmental and human health have shown great improvement over the past 200 years but are not felt equitably around the globe.

Objectives

Students will be able to:

- Evaluate whether certain environmental, social, and economic indicators show improvement or decline over the past 200 years.
- Discuss how increases and decreases in population size can impact the health and well-being of our global community.

Subjects

Environmental Science (General and AP), Geography, AP Human Geography, Health, World History

Skills

Critical thinking, interpreting graphs and charts, identifying trends

Method

Students use the poster, *A Quick Trip to 7.6 Billion*, to determine whether progress has been made in key indicators of human well-being and environmental health over the past 200 years, and then evaluate what these changes mean.



indicators that show an increase and a ↓ for indicators that show a decrease. Remind students to think about each indicator on a global scale.

6. Distribute a set of Reporting Cards to each student and use the following steps for each indicator on the Student Worksheet:
 - a. Read the indicator aloud.
 - b. From the “Status” column on the Worksheet, ask students to use their pointer fingers to show whether that indicator went up or down. Share the correct answer and discuss if needed.
 - c. Ask students to hold up (all at the same time) the Reporting Card that they feel reflects what this trend means for the overall well-being of people around the world: plus sign (+) if it indicates a positive impact, minus sign (-) if it indicates a negative impact, or the combination sign (+/-) if it is a mixture of positives and negatives.
 - d. For those that have a positive impact, ask your students if they think that the impact is felt equally around the globe.
 - e. Ask a few students to share how and why they made their decisions.
 - f. If necessary, briefly discuss any Teacher Notes provided in the Answer Key.
7. Review the Discussion Questions as a class.

Answers to Student Worksheet

See Answer Key

Discussion Questions

1. Why do you think the population growth rate has slowed overall but remains high in less developed countries?

Over the past 200 years, the death rate has decreased in most places around the world. More developed countries have also seen the birth rate decrease and as such, population growth has slowed or stabilized. In less developed countries, the birth rate has not seen the same amount of decrease due to relatively high death and infant mortality rates, less access to education, and less economic opportunity – all factors leading to high birth rates and population growth.

2. What indicators do you think might be affected as the economies of less developed countries grow?

Answers may include: higher consumption of meat and paper, more cars, more CO₂ in the air due to increased industry and higher consumption rates, improved access to water and sanitation, higher average years of school, a decrease in the global wealth gap.

3. The median age in more developed countries is higher than in less developed countries. Why might this be? What problems do you think a country with a large elderly population might face?

People in more developed countries typically have better access to healthcare and doctors, as well as better infrastructure and access to sanitation and improved water sources. Thus, they tend to be



healthier, are able to combat disease and illness easier, and live longer lives. Countries that have a larger elderly population than working population face the challenge of supporting their retired population as they age. They also need to grow or maintain their economies with a smaller percentage of individuals in the workforce.

4. What might contribute to the decrease in arable land per person that we've seen over the years?

Answers may include: increase in urban sprawl, increase in landfills and other waste storage/treatment, more land being used to grow crops that feed livestock instead of directly feed people, increased total population so existing arable land is split amongst more people.

5. Are there any indicators on the Student Worksheet that are connected to each other either directly (as one goes up, so does the other) or indirectly (as one goes up, the other goes down)?

Direct relationship examples – life expectancy and median age, child mortality and birth rates, CO₂ emissions and consumption of energy, meat, and paper, use of fertilizers and ocean dead zones

Indirect relationship examples – contraception use and birth rates, childhood immunizations and child mortality rates

Assessment

As an exit ticket, students choose one factor they reported as “mixed” positive and negative, and explain why and how it can be viewed both ways.

Follow-up Activities

1. Have students choose one indicator from the Student Worksheet and do a research project to investigate the global developments in this area over the past 200 years.
2. Have students choose one (or more) indicators reported as negative (-). Instruct them to work with a partner to brainstorm steps that could be taken (globally, locally, or individually) to help combat the problem.
3. Students create a report card for themselves, their family, the school, or the community using indicators to critique their environmental impact on the planet.



Name: _____

Date: _____

Student Worksheet

Use the poster *A Quick Trip to 7.6 Billion* to decide whether each indicator has increased (↑) or decreased (↓) over the past 200 years. Be sure to consider each from a global perspective. Write the appropriate arrow in the “Status” column.

Note: While not all of these indicators are listed directly on the poster, there is enough information for you to infer the status based on the information provided.

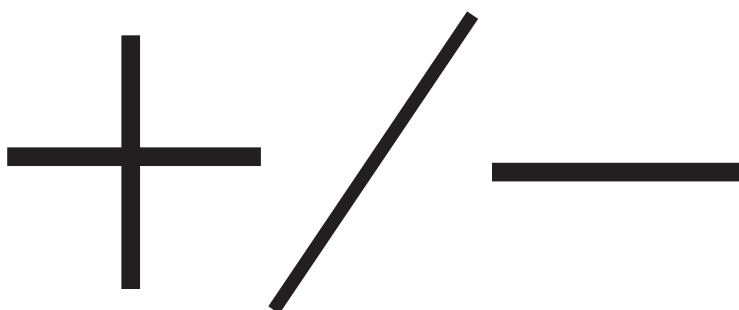
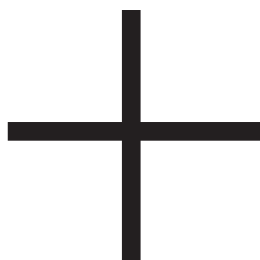
| Indicator | Status (↑/↓) |
|--|--------------|
| Life Expectancy | |
| Total Fertility Rate | |
| Child Mortality Rate | |
| Population Growth Rate | |
| Death Rate | |
| Urban Population | |
| Median Age | |
| Carbon Emissions | |
| Atmospheric Concentration of CO ₂ | |
| Number of Cars in the World | |
| Meat Consumption and Livestock Population | |
| Paper/Paperboard Consumption per Capita | |
| “Dead Zones” in the Oceans | |
| Ecological Footprint | |
| Population Experiencing Water Scarcity | |
| Average Years of School | |
| Internet Use | |



| Indicator (cont'd.) | Status (↑/↓) |
|--|---------------------|
| Mobile Cell Phone Subscriptions | |
| Lifetime Risk of Maternal Death | |
| Access to Clean Water and Basic Sanitation | |
| Prevalence of Undernutrition | |
| Childhood Immunizations in Least Developed Countries | |
| Global Wealth Gap | |
| Acres of Arable Land per Person | |
| World Fertilizer Consumption Over Time | |
| Women in Political Leadership | |



Reporting Cards





Student Worksheet Answer Key

| Indicator | Status | Report | Teacher Notes |
|--|--------|----------|--|
| Life Expectancy | ↑ | Positive | Has improved worldwide but is still lower in less developed countries |
| Total Fertility Rate | ↓ | Positive | Fertility rates all over the world have decreased but still range from 7.2 in Niger to 1 in San Marino |
| Child Mortality Rate | ↓ | Positive | Has improved worldwide but remains high in less developed countries |
| Population Growth Rate | ↓ | Positive | Has slowed but remains high in developing countries; the global population continues to grow |
| Death Rate | ↓ | Positive | More countries have moved through the demographic transition in recent decades |
| Urban Population | ↑ | Mixed | Cities provide more infrastructure and services but unchecked sprawl uses up valuable land; cities that grow too quickly can lack adequate resources and informal settlements with low living conditions can arise |
| Median Age | ↑ | Positive | On average, people are living longer; in developing countries, this progress has slowed in recent years |
| Carbon Emissions | ↑ | Negative | Continues to go up as industrialization increases worldwide |
| Atmospheric Concentration of CO ₂ | ↑ | Negative | Continues to rise steadily leading to warmer worldwide temperatures, ice melt, more extreme weather, etc. |
| Number of Cars in the World | ↑ | Mixed | Fuel combustion contributes to climate change so more cars are not desirable; however, it is also an indication of development in emerging economies |
| Meat Consumption and Livestock Population | ↑ | Mixed | More land for grazing instead of growing crops and forests; high meat diet can cause health problems; in poorer countries, more meat consumption may provide needed protein |
| Paper/Paperboard Consumption per Capita | ↑* | Negative | Creates more deforestation and waste |
| “Dead Zones” in the Oceans | ↑ | Negative | Lack of oxygen kills marine life |
| Ecological Footprint | ↑ | Negative | Unsustainable use of land and resources |



| | | | |
|--|---|----------|---|
| Population Experiencing Water Scarcity | ↑ | Negative | The demand of water is increasing due to agriculture, industry, and domestic use as water pollution increases |
| Average Years of School | ↑ | Positive | But there is still a gender disparity in girls' schooling relative to boys' schooling |
| Internet Use | ↑ | Positive | More global communication and networking |
| Mobile Cell Phone Subscriptions | ↑ | Positive | More global connections |
| Lifetime Risk of Maternal Death | ↓ | Positive | But still a long way to go in least developed countries |
| Access to Clean Water and Basic Sanitation | ↑ | Positive | But have made modest gains in recent years; 844 million people lack access to drinking water; 2.3 billion lack improved sanitation |
| Prevalence of Undernutrition | ↓ | Positive | About 800 million people in world still experience chronic hunger |
| Childhood Immunizations in Least Developed Countries | ↑ | Positive | There's been a significant increase (from approximately 50% to approximately 75%) in the percentage of babies immunized for measles and DTP (Diphtheria, Pertussis and Tetanus) in less developed countries |
| Global Wealth Gap | ↑ | Negative | Greater disparity of wealth between richest and poorest within nations and globally |
| Acres of Arable Land per Person | ↓ | Negative | Could become a problem as population grows |
| World Fertilizer Consumption Over Time | ↑ | Mixed | Nitrogen-based fertilizer degrades the nutrients in the soil over time; more fertilizer use may indicate more agricultural development in the poorest countries |
| Women in Political Leadership | ↑ | Positive | While there are more women legislators and heads of state than in past decades, the increase is very small relative to the number of male lawmakers; some countries have quotas to increase female participation, but most do not |

*There has been a slight decrease in the past decade, but over the past 200 years, the overall per capita use has increased.