Chapter 7 Review

Opening Case Study-

This article is using China as an example of how when the population and affluence of a country increasing, so do their environmental challenges. China has the most populous nation in the world, but now it is becoming a problem because their population is becoming wealthier and they are now able to afford things that they couldn't before such as cars and refrigerators. All this new technology calls the need for the use of more raw materials and electricity, having a huge impact on the environment. While the United States has all of these technologies and more, our population isn't as large and doesn't have as big of an effect. As every country becomes more industrialized we face more problems, so what will be the environmental impact of humans in 2020?

Key Concepts-

- Describe the potential limits to human population growth
- Describe important aspects of global and national population growth using demographic and terminology and tools
- Evaluate the social, economic, and environmental factors that have contributed to decreasing growth rates in many countries
- Analyze relationships among changes in population size, economic development, and resource consumption at global and local scales.
- Explain how people have attempted to harmonize economic development with sustainable development with sustainable development.

Scientists disagree on Earths carrying capacity

Human population used to not grow so fast, but because of growing agricultural output and sanitation began to improve, the death rate became less while the birth rate remained the same. Roughly every 5 days the global population increases by a million people. Scientist argue about how large or small our carrying capacity is. Thomas Malthus, 1978, showed that the human population was growing exponentially while the food supply was growing linearly, concluding that we will run out of food eventually. Other scientists believe that we do not have a carrying capacity. They think that as long as the population increases, then there will be smarter people that will find a way to improve our earth.

Many Factors drive human population growth

The main factors that influence human population growth

- Migration
  - Immigration- People coming into a country
  - Emigration- People going out a country
- Crude Birth Rate (CBR) - Number of births per 1,000 individuals per year
- Crude Death Rate (CDR) – Number of deaths per 1,000 individuals per year
- Total Fertility Rate (TFR) – an estimate of the average number of children that each woman in a population will bear throughout her childbearing years
- Life expectancy
  - Infant Mortality Rate- The number of deaths of children under **1**year of age per 1,000 live births.
  - Child Mortality Rate- The number of deaths of children under **5** per 1,000 live births

- Age Structure- If a population has a large number of older individuals; it has a higher crude death rate.
- Disease- Disease is the second biggest killer worldwide after heart disease.
- Age Structure- Age structure diagrams, visual representations of age structure within a country for males and females, help group countries into three categories.
    - Population Pyramid- a country with more younger people than older and is associated with developing countries.
    - Column Diagram- Country that has little difference between age groups has a diagram that looks like a column; these are countries that have a low population growth or a developed country.
    - Inverted Triangle- This example has a greater number of older people that younger people and shows that a population is decreasing.

Many Nations go Through a Demographic Transition

- Demographic Transition- says that as a country moves from a subsistence economy to industrialization and increased affluence, it undergoes a predictable shift in population growth.
    - Phase 1: Slow population growth- The population doesn't grow as quickly because the death rates and birth rates counteract each other.
    - Phase 2: Rapid population growth- Death rates decline while birth rates remain high. This happens because access to resources increases and is more available to the general population.
    - Phase 3: Stable population growth- Enters this phase as the economy and educational system improves. People produce fewer children when their income increases.
    - Phase 4: Declining population growth- Characterized by high level of affluence and economic development.

Population Size and Consumption Interact to Influence the Environment

- IPAT Equation- (Impact=Population x Affluence x Technology) This is representing the three major factors that influence environment impact.
    - Impact- Overall environmental effect of a human population
    - Population- straight forward effect on impact. Lager population means larger impact
    - Affluence- the more affluence a society/individual is, the higher the environmental impact will be
    - Technology- Can help or hurt the environment. Example: Hybrid cars help the environment, but regular cars hurt the environment.
- Global Impacts- In developing countries they may use less resources than developing countries do. But developing countries have technology to protect their environment such as sewage systems.
- Affluence- Most common measure of nations wealth is Gross Domestic Product (GDP), the value of all products and services produced in a year in that country. Increase in the GDP of developing nations help the environment. First because rising income shows falling birthrates, and second, wealthier countries can afford to make environmental improvements.

Sustainable Development is a Common, if Elusive, Goal

- Economic Development- Improvement in human well-being through economic advancement.
- Sustainable Development- Meet the essential needs of people in the present without compromising the ability of future generation to meet their needs.

Equations to know

Global Population Growth Rate = (CBR-CDR) / 10

National Population Growth Rate = [(CBR + Immigration) – (CDR + Emigration)] / 10

Doubling Time (in years) =70 / growth rate

Net Migration Rate = (number of immigrants) / (number of people in the population)

Things we need to Work on

- Working towards sustainability
- Population Control
- Amount of Affluence