**(AP) ENVIRONMENTAL SCIENCE 2022-23 November 21, 2022**

**Today’s Agenda (Day 57)**

1. Housekeeping Items

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1. Homework Check:

🡪 Ch 7 Reading Guide

1. Class Activity:

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🡪 DAY 4: Chapter 7 PPT Review

1. **Section 7.8 – Human population characteristics and implications**
2. **Section 7.9 – Factors that Influence human population growth**
3. Section 7.10 – Population growth rates and standard of living
4. Section 7.11 – Hunger, food production and environmental degradation
5. Section 7.12 – The demographic transition concept
6. Section 7.13 - The US population picture
7. Section 7.14 – What does the future hold?

HOMEWORK:

* READ: Chapter 7 – Populations: Characteristics and Issues
* READ: Chapter 8 – Energy and Civilization: Patterns of Consumption
* COMPLETE:
* **STUDY**: Chapter 7 Vocabulary Quiz & Test

CHAPTER 7 – Populations

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| --- | --- | --- | --- | --- | --- |
| Affluence | Age distribution | Asexual reproduction  | Biotic potential | Birth rate | Carrying capacity |
| Death phase | Death rate | Deceleration phase | Demography | Density-dependent limiting factors | Dispersal |
| Doubling time | Ecological footprint | Emigration | Environmental resistance | Exponential growth phase (log phase) | Extrinsic limiting factors |
| Gross national income | Immigration  | intrinsic limiting factors | K-strategists | Lag phase | Less-developed countries |
| Limiting factors | More-developed countries | Mortality | Natality | Population | Population density |
| Population growth rate | R-strategists | Replacement fertility | Sex ratio | Sexual reproduction | Stable equilibrium phase |
| Standard of living  | Survivorship curve | Total fertility rate | Zero population growth |  |  |

Chapter 8 & 9 Vocabulary

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| Absorbed dose | Acid mine drainage | Alpha radiation | Anthracite | Beta radiation | Bituminous |
| Black lung disease | Coal | Crude oil | Dose equivalent | Fissionable | Fossil fuels |
| Gamma radiation | Hydraulic fracturing (fracking) | Industrial Revolution | Ionizing radiation | Lignite | Liquified natural gas |
| Mountaintop removal | Natural gas | Non-renewable energy sources | Nuclear chain reaction | Nuclear fission | Nuclear reactor |
| Oil shale | Open pit mining  | Ore | Overburden | Peat  | Petrochemicals |
| Petroleum (crude oil) | Plutonium-239 | Radiation | Radioactive | Radioactive half-life | Renewable energy sources  |
| Reserves  | Resource | Smelting | Spoils | Strip mining | Surface mining |
| Tar sands | Underground mining | Uranium-235 |  |  |  |

REMINDERS

* **TEST: Ch 7 🡪 Nov. 22**
* Chapter 8 & 9 Vocabulary – Nov. 23
* Chapter 8 Reading Guide – Nov. 28
* **TEST: Ch 8 🡪 Dec. 1**
* **QUIZ: Ch 8 and 9 Vocabulary – Dec. 6**
* **MIDTERM EXAM: Ch 1 - 9**

**(AP) ENVIRONMENTAL SCIENCE 2022-23 READING GUIDECHAPTER 7**

REVIEW QUESTIONS

1. How is biotic potential related to the rate at which a population will grow?

2. List three characteristics populations might have.

3. Why do some populations grow? What factors help to determine the rate of this growth?

4. Draw and label a population growth curve.

5. Under what conditions might a death phase occur?

6. List four factors that could determine the carrying capacity of an animal species.

7. How do the concepts of birth rate and population growth differ?

8. How does the population growth curve of humans compare with that of bacteria on a petri dish?

9. Give examples of intrinsic, extrinsic, density-dependent, and density-independent limiting factors.

10. How do K-strategists and r-strategists differ?

11. As the human population continues to increase, what might happen to other species?

12. All successful organisms overproduce. What advantage does this provide for the species? What disadvantages may occur? 13. What is demographic transition? What is it based on?

14. Interpret the meaning of I = P x A x T.

15. Why is your ecological footprint larger than that of a person in Africa?

16. How does the age distribution of a population affect the rate at which a population grows?

17. Why do economic well-being and the status of women influence the number of children born in a country?

18. List ten differences between your standard of living and that of someone in a less-developed country.

19. Why do people who live in overpopulated countries use plants as their main source of food?

20. Which three areas of the world have the highest population growth rate? Which three areas of the world have the lowest standard of living?

21. Describe three reasons why women in the less-developed world might desire more than two children.

22. How are age distribution, total fertility rate, and immigration affecting the way the U.S. population is changing?

CRITICAL THINKING QUESTIONS [for APES students only]

1. Why do you suppose some organisms display high natality and others display lower natality? For example, why do cottontail rabbits show high natality and wolves relatively low natality? Why wouldn’t all organisms display high natality?

2. Consider the differences between K-strategists and r-strategists. What costs are incurred by adopting either strategy? What evolutionary benefits does each strategy enjoy?

3. Do you think it is appropriate for developed countries to persuade less-developed countries to limit their population growth? What would be appropriate and inappropriate interventions, according to your ethics? Now imagine you are a citizen of a less-developed country. What might be your reply to those who live in more developed countries? Why?

4. Population growth causes many environmental problems. Identify some of these problems. What role do you think technology will play in solving these problems? Are you optimistic or pessimistic about these problems being solved through technology? Why?

5. Do you think that demographic transition will be a viable option for world development? What evidence leads you to your conclusions? What role should the developed countries play in the current demographic transition of developing countries? Why?

6. Imagine a debate between an American and a Sudanese person about human population and the scarcity of resources. What perspectives do you think the American might bring to the debate? What perspectives do you think the Sudanese would bring? What might be their points of common ground? On what might they differ?

7. Many people in developing countries hope to achieve the standard of living of those in the developed world. What might be the effect of this pressure on the environment in developing countries? On the political relationship between developing countries and already developed countries? What ethical perspective do you think should guide this changing relationship?

8. The demographic changes occurring in Mexico have an influence on the United States. What problems does Mexico face regarding its demographics? Should the United States be involved in Mexican population policy?

**(AP) ENVIRONMENTAL SCIENCE 2022-23 READING GUIDECHAPTER 8**

REVIEW QUESTIONS

1. How did the domestication of animals change energy use in early cultures?

2. In addition to food, what energy requirements does a civilization have?

3. How was the availability of coal important in determining if a country participated in the Industrial Revolution?

4. What factors caused a shift from wood to coal as a source of energy?

5. What major factor caused a shift to the use of oil as a source of energy?

6. Describe two factors that have led to the dominance of automobiles as a form of transportation in the United States.

7. Describe two actions governments take that cause changes in how citizens use energy.

8. What advantages does electrical energy have over other kinds of energy?

9. State two reasons the cost of electricity differs from one country to another.

10. List the three primary categories of energy use in industrialized societies.

11. Why is OPEC important in the world’s economy?

12. Give examples of how political and economic events affect energy prices and usage.

13. Based on current trends, what is likely to happen to the availability and price of energy in the next ten years?

CRITICAL THINKING QUESTIONS [for APES students only]

1. Imagine you are a historian writing about the Industrial Revolution. Imagine that you also have your new knowledge of environmental science and its perspective. What kind of a story would you tell about the development of industry in Europe and the United States? Would it be a story of triumph or tragedy, or some other story? Why?

2. What might be some of the effects of raising gasoline taxes in the United States to the rate that most Europeans pay for gasoline? Why? What do you think about this possibility?

3. Some argue that the price of gasoline in the United States is artificially low because it does not take into account all of the costs of producing and using gasoline. If you were to figure out the “true” cost of gasoline, what kinds of factors would you want to consider?

 4. How has the ubiquitous nature of automobiles changed the United States? Do you feel these changes are, on balance, positive or negative? What should the future look like regarding automobile use in the United States? How can this be accomplished?

5. The Organization of Petroleum Exporting Countries (OPEC) controls over 70 percent of the known oil reserves. What political and economic effects do you think this has? Does this have any effect on energy use?

6. How do you think projected energy consumption will affect world politics and economics, given current concerns about global warming?