Unit 4 Human Population

Content Area: **Science**
Course(s): **AP Environmental Science**
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Enduring Understandings

ERT-3 Populations change over time in reaction to a variety of factors

EIN-1 Human Populations change in reaction to a variety of factors, including social and cultural factors.

Essential Questions

- How do changes in habitats influence changes in species over time?
- How is educational opportunity for women connected to human population changes?

Content

- Carrying capacity
- Population growth factors
- Age structure diagrams
- Total Fertility rate
- Human population growth and decline
- Demographic transition

Standards

ERT-3.F.1 Population growth is limited by environmental factors, especially by the available resources and space.
ERT-3.F.2 Resource availability and the total resource base are limited and finite over all scales of time
ERT-3.F.3 When the resources needed by a population for growth are abundant, population growth usually accelerates.
ERT-3.F.5 When the resource base of a population shrinks, the increased potential for unequal distribution of resources will ultimately result in increased mortality, decreased fecundity, or both, resulting in population growth declining to, or below, carrying capacity.

EIN-1.A.1 Population growth rates can be interpreted from age structure diagrams by the shape of the structure.
EIN-1.A.2 A rapidly growing population will, as a rule, have a higher proportion of younger people compared to stable or declining populations.

EIN-1.B.1 Total fertility rate (TFR) is affected by the age at which females have their first child, educational opportunities for females, access to family planning, and government acts and policies.
EIN-1.B.2 If fertility rate is at replacement levels, a population is considered relatively stable.
EIN-1.B.3 Factors associated with infant mortality rates include whether mothers have access to good healthcare and nutrition. Changes in these factors can lead to changes in infant mortality rates over time.

EIN-1.C.1 Birth rates, infant mortality rates, and overall death rates, access to family planning, access to good nutrition, access to education, and postponement of marriage all affect whether a human population is growing or declining.
EIN-1.C.2 Factors limiting global human population include the Earth's carrying capacity and the basic factors that limit human population growth as set forth by Malthusian theory.
EIN-1.C.3 Population growth can be affected by both density-independent factors, such as major storms, fires, heat waves, or droughts, and density-dependent factors, such as access to clean water and air, food availability, disease transmission, or territory size.
EIN-1.C.4 The rule of 70 states that dividing the number 70 by the percentage population growth rate approximates the population's doubling time.
EIN- 1.D.1 The demographic transition refers to the transition from high to lower birth and death rates in a country or region as development occurs and that country moves from a preindustrial to an industrialized economic system. This transition is typically demonstrated through a four-stage demographic transition model (DTM).
EIN- 1.D.2 Characteristics of developing countries include higher infant mortality rates and more children in the workforce than developed countries.

Learning Objectives

ERT-3.F Explain how resource availabilty affects population growth
EIN-1.A Explain age structure diagrams
EIN-1.B Explain factors that affect total fertility rate in human populations
EIN- 1.C.1 Explain how human populations experience growth and decline

Resources

College Board AP Central : https://apcentral.collegeboard.org/courses/ap-environmental-science/course

College Board AP Environmental Science Course & Exam Description Manual https://apstudents.collegeboard.org/sites/default/files/2019-05/ap-environmental-science-course-and-exam-description.pdf

College Board AP Environmental Science "AP Classroom" https://apcentral.collegeboard.org/about-ap/news-changes/ap-2019?course=ap-environmental-science

AP Environmental Science Classroom Resources https://apcentral.collegeboard.org/courses/ap-environmental-science/classroom-resources

Khan Academy (Please look in AP Biology & Chemistry/Physics for all APES

topics) https://www.khanacademy.org/science

Bozeman Science AP Environmental Science videos http://www.bozemanscience.com/ap-environmental-science