

World of 8 Billion Topic Connections to AP Environmental Science Standards

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Climate Migration

Unit 1 - The Living World

- Topic 1.2 - Terrestrial Biomes
 - ERT-1.B.4 The worldwide distribution of biomes is dynamic; the distribution has changed in the past and may again shift as a result of global climate changes.

Unit 3 - Populations

- Topic 3.8 - Human Population Dynamic
 - 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.

Unit 5 - Land & Water Use

- Topic 5.10 - Impacts of Urbanization
 - EIN-2.M.2 Urbanization, through the burning of fossil fuels and landfills, affects the carbon cycle by increasing the amount of carbon dioxide in the atmosphere.
 - EIN-2.M.3 Impervious surfaces are human-made structures—such as roads, buildings, sidewalks, and parking lots—that do not allow water to reach the soil, leading to flooding.
 - EIN-2.M.4 Urban sprawl is the change in population distribution from high population density areas to low density suburbs that spread into rural lands, leading to potential environmental problems.

Unit - 8 - Aquatic & Terrestrial Pollution

- Topic 8.15 - Pathogens and Infectious Diseases
 - EIN-3.D.1 Pathogens adapt to take advantage of new opportunities to infect and spread through human populations.
 - EIN-3.D.3 As equatorial-type climate zones spread north and south into what are currently subtropical and temperate climate zones, pathogens, infectious diseases, and any associated vectors are spreading into these areas where the disease has not previously been known to occur.

Unit 9 - Global Change

- Topic 9.4 - Increases in the Greenhouse Gases

- STB-4.E.1 Global climate change, caused by excess greenhouse gasses in the atmosphere, can lead to a variety of environmental problems including rising sea levels resulting from melting ice sheets and ocean water expansion, and disease vectors spreading from the tropics toward the poles. These problems can lead to changes in population dynamics and population movements in response.
- Topic 9.5 - Global Climate Change
 - STB-4.F.2 Effects of climate change include rising temperatures, melting permafrost and sea ice, rising sea levels, and displacement of coastal populations.

Health

Unit 3 - Populations

- Topic - 3.7 Total Fertility Rate
 - 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.

Unit 5 - Land & Water Use

- Topic 5.14 - Integrated Pest Management
 - STB-1.D.2 Integrated pest management (IPM) minimizes disruptions to the environment and threats to human health but can be complex and expensive.

Unit 7 - Atmospheric Pollution

- Topic 7.2 - Photochemical Smog
 - STB-2.B.7 Photochemical smog can harm human health in several ways, including causing respiratory problems and eye irritation.

Unit 8 - Aquatic & Terrestrial Pollution

- Topic 8.14 - Pollution and Human Health
 - EIN-3.C.1 It can be difficult to establish a cause and effect between pollutants and human health issues because humans experience exposure to a variety of chemicals and pollutants.
- Topic 8.15 - Pathogens and Infectious Diseases
 - EIN-3.D.1 Pathogens adapt to take advantage of new opportunities to infect and spread through human populations.
 - EIN-3.D.2 Specific pathogens can occur in many environments regardless of the appearance of sanitary conditions.
 - EIN-3.D.3 As equatorial-type climate zones spread north and south into what are currently subtropical and temperate climate zones, pathogens, infectious diseases, and any associated vectors are spreading into these areas where the disease has not previously been known to occur.
 - EIN-3.D.4 Poverty-stricken, low-income areas often lack sanitary waste disposal and have contaminated drinking water supplies, leading to havens and opportunities for the spread of infectious diseases.

- EIN-3.D.5 Plague is a disease carried by organisms infected with the plague bacteria. It is transferred to humans via the bite of an infected organism or through contact with contaminated fluids or tissues

Unit 9 - Global Change

- Topic 9.1 - Stratospheric Ozone Depletion
 - STB-4.A.3 A decrease in stratospheric ozone increases the UV rays that reach the Earth's surface. Exposure to UV rays can lead to skin cancer and cataracts in humans.

Invasive Species

Unit 1 - The Living World: Ecosystems

- Topic 1.11 - Food Chains and Food Webs
 - ENG-1.D.2 Positive and negative feedback loops can each play a role in food webs. When one species is removed from or added to a specific food web, the rest of the food web can be affected.

Unit 2 - The Living World: Biodiversity

- Topic 2.1 - Introduction to Biodiversity
 - ERT-2.A.2 The more genetically diverse a population is, the better it can respond to environmental stressors. Additionally, a population bottleneck can lead to a loss of genetic diversity.
- Topic 2.3 - Island Biogeography
 - ERT-2.E.1 Many island species have evolved to be specialists versus generalists because of the limited resources, such as food and territory, on most islands. The long-term survival of specialists may be jeopardized if and when invasive species, typically generalists, are introduced and outcompete the specialists.

Unit 3 - Populations

- Topic 3.2 - K-Selected r-Selected Species
 - ERT-3.B.5 K-selected species are typically more adversely affected by invasive species than r-selected species, which are minimally affected by invasive species. Most invasive species are r-selected species.

Unit 8 - Aquatic and Terrestrial Pollution

- Topic 8.15 - Pathogens and Infectious Diseases
 - EIN-3.D.8 West Nile virus is transmitted to humans via bites from infected mosquitoes.

Unit 9 - Global Change

- Topic 9.8 - Invasive Species
 - EIN-4 The health of a species is closely tied to its ecosystem, and minor environmental changes can have a large impact.
 - EIN-4.A.1 Invasive species are species that can live, and sometimes thrive, outside of their normal habitat. Invasive species can sometimes be beneficial, but they are considered invasive when they threaten native species.

- EIN-4.A.2 Invasive species are often generalist, r-selected species and therefore may outcompete native species for resources.
 - EIN-4.A.3 Invasive species can be controlled through a variety of human interventions.
- Topic 9.9 - Endangered Species
 - EIN-4.B.1 A variety of factors can lead to a species becoming threatened with extinction, such as being extensively hunted, having limited diet, being outcompeted by invasive species, or having specific and limited habitat requirements.
- Topic 9.10 - Human Impacts on Biodiversity
 - EIN-4.C.1 HIPPCO (habitat destruction, invasive species, population growth, pollution, climate change, and over exploitation) describes the main factors leading to a decrease in biodiversity