

Environmental Science

Adopted 2016

Obtain, evaluate, and communicate information to investigate the flow of energy and cycling of matter within an ecosystem. [SEV1](#)

- a. Develop and use a model to compare and analyze the levels of biological organization including organisms, populations, communities, ecosystems, and biosphere. [SEV1.A](#)

- b. Develop and use a model based on the Laws of Thermodynamics to predict energy transfers throughout an ecosystem (food chains, food webs, and trophic levels). [SEV1.B](#)

- c. Analyze and interpret data to construct an argument of the necessity of biogeochemical cycles (hydrologic, nitrogen, phosphorus, oxygen, and carbon) to support a sustainable ecosystem. [SEV1.C](#)

- d. Evaluate claims, evidence, and reasoning of the relationship between the physical factors (e.g., insolation, proximity to coastline, topography) and organismal adaptations within terrestrial biomes. [SEV1.D](#)

- e. Plan and carry out an investigation of how chemical and physical properties impact aquatic biomes in Georgia. [SEV1.E](#)

Obtain, evaluate, and communicate information to construct explanations of stability and change in Earth's ecosystems. [SEV2](#)

- a. Analyze and interpret data related to short-term and long-term natural cyclic fluctuations associated with climate change. [SEV2.A](#)

- b. Analyze and interpret data to determine how changes in atmospheric chemistry (carbon dioxide and methane) impact the greenhouse effect. [SEV2.B](#)

- c. Construct an argument to predict changes in biomass, biodiversity, and complexity within ecosystems, in terms of ecological succession. [SEV2.C](#)

- d. Construct an argument to support a claim about the value of biodiversity in ecosystem resilience including keystone, invasive, native, endemic, indicator, and endangered species. [SEV2.D](#)

Obtain, evaluate, and communicate information to evaluate types, availability, allocation, and sustainability of energy resources. [SEV3](#)

- a. Analyze and interpret data to communicate information on the origin and consumption of renewable forms of energy (wind, solar, geothermal, biofuel, and tidal) and non-renewable energy sources (fossil fuels and nuclear energy). [SEV3.A](#)

- b. Construct an argument based on data about the risks and benefits of renewable and nonrenewable energy sources. [SEV3.B](#)

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- c. Obtain, evaluate, and communicate data to predict the sustainability potential of renewable and non-renewable energy resources. SEV3.C**
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- d. Design and defend a sustainable energy plan based on scientific principles for your location. SEV3.D**
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Obtain, evaluate, and communicate information to analyze human impact on natural resources. SEV4

- a. Construct and revise a claim based on evidence on the effects of human activities on natural resources.**
 - Human Activities**
 - Agriculture
 - Forestry
 - Ranching
 - Mining
 - Water
 - Urbanization
 - Fishing
 - Water use
 - Pollution
 - Desalination
 - Waste water treatment
 - Natural Resources**
 - Land
 - Water
 - Air
 - Organisms**SEV4.A**
 - b. Design, evaluate, and refine solutions to reduce human impact on the environment including, but not limited to, smog, ozone depletion, urbanization, and ocean acidification. SEV4.B**
 - c. Construct an argument to evaluate how human population growth affects food demand and food supply (GMOs, monocultures, desertification, Green Revolution). SEV4.C**
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Obtain, evaluate, and communicate information about the effects of human population growth on global ecosystems. SEV5

- a. Construct explanations about the relationship between the quality of life and human impact on the environment in terms of population growth, education, and gross national product. SEV5.A**
- b. Analyze and interpret data on global patterns of population growth (fertility and mortality rates) and demographic transitions in developing and developed countries. SEV5.B**
- c. Construct an argument from evidence regarding the ecological effects of human innovations (Agricultural, Industrial, Medical, and Technological Revolutions) on global ecosystems. SEV5.C**
- d. Design and defend a sustainability plan to reduce your individual contribution to environmental impacts, taking into account how market forces and societal demands (including political, legal, social, and economic) influence personal choices. SEV5.D**