

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 ActivitiesAgricultureForestryRanchingMiningWaterUrbanizationFishingWater usePollutionDesalinationWaste water treatmentNatural ResourcesLandWaterAirOrganisms [SEV4.A](#)
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- 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](#)
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- 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](#)
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- 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](#)
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- c.** Construct an argument from evidence regarding the ecological effects of human innovations (Agricultural, Industrial, Medical, and Technological Revolutions) on global ecosystems. [SEV5.C](#)
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- 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](#)
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