
APES free-response points are earned by naming the process and identifying its direction: which way the nutrient moves, whose cost it becomes, what the population does next. A definition without that consequence scores nothing.

Ecosystems and biodiversity

Ecosystem services – the benefits people obtain from ecosystems, such as water purification, pollination, flood control and climate regulation

Primary productivity – the rate at which producers convert solar energy into chemical energy as biomass

Trophic level – a feeding position in a food chain; only about 10% of the energy at one level is transferred to the next

Biodiversity – the variety of species, genes and ecosystems in a region; greater diversity generally increases resilience to disturbance

Keystone species – a species whose influence on community structure far exceeds what its abundance would suggest

Biogeochemical cycle – the movement of an element between living organisms and reservoirs in the atmosphere, water and rock

Populations

Carrying capacity – the maximum population an environment can sustain indefinitely given its limiting resources

Sustainable yield – the amount of a renewable resource that can be harvested without reducing the stock available in future

Demographic transition – the shift from high birth and death rates to low ones as a country industrialises and develops

Ecological footprint – the area of productive land and water needed to supply a population's resources and absorb its waste

Land, water and energy

Tragedy of the commons – the degradation of a shared resource because each user gains the full benefit of taking more while the cost is spread across everyone

Externality – a cost or benefit of an activity that falls on a third party and is not reflected in its market price

Renewable resource – a resource replenished by natural processes at a rate comparable to its use

Nonrenewable resource – a resource whose stock is fixed on human timescales, so use depletes it permanently

Desertification – the degradation of drylands into desert-like conditions through overgrazing, deforestation or poor irrigation

Salinization – the accumulation of salts in soil, usually from irrigation water evaporating and leaving its dissolved salts behind

Pollution

Point source pollution – pollution discharged from a single identifiable location, such as a pipe or smokestack

Nonpoint source pollution – pollution from many diffuse sources, such as agricultural runoff, which is far harder to regulate

Eutrophication – nutrient enrichment of water causing an algal bloom, whose decomposition consumes dissolved oxygen and kills aquatic life

Biomagnification – the increase in concentration of a persistent toxin at each successive trophic level

Bioaccumulation – the build-up of a substance within a single organism over its lifetime, because intake exceeds excretion

Atmosphere and global change

Greenhouse effect – the warming caused when atmospheric gases absorb outgoing infrared radiation and re-emit it toward the surface

Albedo – the fraction of incoming solar radiation a surface reflects; ice has a high albedo and open ocean a low one

Ozone depletion – the thinning of stratospheric ozone by chlorine radicals released from CFCs, which admits more UV-B to the surface

Urban sprawl – low-density outward growth of a city, which raises transport emissions and consumes surrounding farmland