

# Define environmental change

Business



Environmental change is a deviance, disturbance or natural change in the biophysical environment and climate of the planet. For millions of years, environmental changes have been constantly taking place on earth; however, the extent, the dimension, and the tempo, at which they have been occurring since the industrial revolution, are disturbing. The impacts on the environment can be distinguished as indirect and direct. Indirect impacts are the environmental changes that do not have an explicit impact on the ecosystem, e. g. global climate, population growth and socio-economic change.

Direct impacts are human-induced factors that cause a dramatic change in an ecosystem, e. g. pollution, exhaust, drainage, deforestation, disease and wars. Human activity has already led to the risk of crossing critical line that could result in irreversible consequences to ecological systems. Last century the stratospheric ozone hole appeared over Antarctica, and it is an example of a human-triggered alarming change in the atmosphere. Describe the formation of coastal acid sulfate soils.

Soils and sediments that include iron sulfides (the most widespread are pyrite) are generally called Acid sulfate soil (ASS). Pyrite ( $\text{FeS}_2$ ), located in acid sulfate soils, is not evident for the unaided eye. Soils emit sulfuric acid, and sometime toxic substances of iron, aluminum and heavy metals, only when they aerate due to drainage or disturbance. Some ASS was generated millions of years ago and are formed in ancient marine rocks. Nevertheless, ASS that are causing concern were produced during Holocene epoch, e.

g. within the past ten thousand years after the last great sea level rise. On coastal wetlands they are generally found as particles of Holocene marine sands and dirt bedded in protected environments with low-energy, such as deltas of rivers and coastal lakes; ASS is still being generated in such environments. What are the impacts of acid soils on local flora and fauna communities? ASS are soils and sediments that include iron sulfides. In Western Australia they are located naturally and they are harmless, when deposited in an undisturbed and waterlogged environment. However, when they are aerated through digging and drainage, the iron sulfides react with water and oxygen to emit iron substances and sulfuric acid.

Hence, the acid can let out other toxic matters such as heavy metals into the surrounding waterways and environment. Negative impacts are following: damage to aquaculture industries and fisheries, destruction of infrastructure (corrosion of steel pipes and concrete), bridges and building fundamentals as well as a detriment to tourism (harm to recreational waterways and swimming areas). Define species richness and species diversity. The effective quantity of various species that consists of a multitude of individuals is species diversity. The quantity of species refers to the quantity of equally-abundant species required to gain the same average proportional (actually all species more likely not to be equally abundant in the area). Species diversity includes two conceptions as species evenness and species richness.

Species evenness demonstrates the equality of the total number of the species individuals in an area. Species richness is the quantity of species in the area. Species richness does not consider the abundances of the species

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or their comparative abundance distributions, but species diversity considers both richness and evenness of the species. What is the 'edge effect'? The edge effect is the inclination within a certain ecotone to show signs of augmentation in the density and the variety of flora and fauna. An ecotone is the area located on the junction of two different environmental types that contain different specifications of the environment. Such a phenomenon is typically observed at the edge or confine between very different ecological environments.

When the junction between two ecological zones explodes with a high density of different species from both adjoining areas, there is what ecologists call the edge effect. The edge effect can be generated either naturally or artificially. The pattern of vegetation change in Australia since European settlement has been dominated by clearance for agriculture. Is clearance still continuing? Excessive clearing of vegetation is still continuing in Australia. Although the rates of clearing have been reduced over the past 10 years, still vegetation clearing is much more excessive than is being regenerating naturally or replanted. European settlement has changed Australia's natural landscape and biodiversity.

Approximately 90 percent of native vegetation was destroyed for agriculture, human habitation and industry constructions. Roughly 50 percent of rainforests were destroyed, and more than two thirds of the woodland was removed. Approximately 5 percent of flora, 23 percent of mammals, 9 percent of birds, 7 percent of reptiles, 16 percent of amphibians and 9 percent of freshwater fish are on the edge of being extinct. Vegetation clearing reduces water quality by increasing sedimentation of waterways and <https://assignbuster.com/define-environmental-change/>

causes erosion. Clearing causes the deprivation of millions of plants and animals, and, as a consequence, extinction of native biodiversity. The clearing also leads to salt-blighted water and lands; salt damage influences the regional infrastructure of the towns or cities, and finally to the greenhouse gas pollution.

What is the difference between a PASS and an AASS? Actual and potential acid sulfate soils are both associated with the term AAS. Actually, AASS often overlie PASS. Not disturbed AAS are harmless; the iron sulfides are not toxic and the adjacent soil pH is slightly acid when they are bedded in groundwater that is permanent. Such soils are named potential acid sulfate soils (PASS), because they have a potential to release sulfuric acid when being aerated. Actual acid sulfate soils (AASS) have been already oxidized and released acid, so surrounding soil pH is of less than 4. There is often a yellow and / or red mottling in AASS soil profile.

AASS that are still filled in sulfides can release more acid and oxidize further when the conditions are suitable. Give an example of soil structural decline detailing causes and effects. Volume and arrangement of pores defines the soil structure. It determines the ability of air and water to move through and into the soil, the ability to hold together the soil particles. Organic matters facilitate the binding of the soil; thus, they are crucial for maintaining favorable structure.

When cultivated soil loses much of the organic matter, the soil particles lose their stability. Cultivation also destroys the biopores generated by soil dwelling animals and plant roots, and exactly these biopores facilitate

infiltration of water and air. Soil structure decline increases risk of the soil erosion, resulting in the prolonged or sometimes irreversible degradation of the soil, as well as poor soil structure significantly reduces productivity. How are habitat loss and fragmentation linked? The ecosystems have been dramatically altered by human activities such as deforestation, agriculture, industrial structures, oil and gas exploration and water drainage. It became fewer and fewer places where wildlife can inhabit, and such habitat loss is the threat to the survival of flora and fauna.

Habitat loss can be caused by habitat destruction, fragmentation and degradation. Habitat fragmentation is caused by alteration of habitat due to spatial separation of habitat and can cause of biodiversity destruction. Fragmentation may isolate a species population of such size that may be near to risk local extinction in case of unfavorable conditions. What is a diversity index? A diversity index is a measure that considers different types and counts them; it also considers the distributive evenness of individual's quantity among those types. The value of a diversity index depends on both the number of types and their evenness. For a particular set of types, the maximized value of a diversity index will be when all types become equally abundant.

In ecology, for plants and animals, the measure of abundance could be, for instance, the number of individuals, coverage or biomass, and the type of interest is various species. In demography, the types of interest can be various demographic groups. What is bulk density? What effect does an increase in bulk density have on water infiltration? Bulk density can be measured by dividing the mass of soil on soil's unit volume; it measures <https://assignbuster.com/define-environmental-change/>

volumetric content of water and soil porosity. The measurement depends on the porosity of soil, organic matter content and the soil structure, which also influence hydraulic conductivity. Soils that demonstrate less porosity and massive structure have higher bulk densities approximately from 1.6 to 1.7 gcm<sup>-3</sup>, and water movement is hindered in such soils. Bulk density typically increases with soil depth. Therefore, high level of bulk density associated with low soil compaction and soil porosity, and it causes obstacles to root growth and limited movement of water and air and water through and into the soil. Thus, the increase in bulk density reduces water infiltration into and through the soil. Detail what happens to the hydrology of catchments and the resultant changes to frog habitats and populations.

Drainage changes surface water hydrology, not only by replacing plans of flow but by dispersing contaminants and changing the natural balance of flora and fauna. The altering of hydrologic environment is continuing to cause a variety of changes in the ecosystem. The first immediate change is an alteration of the direction and magnitude of surface water flow. Such hydrological variations are influencing the health and distribution of the aquatic and riparian vegetation. There is a lot of evidence of declining populations and health of flora and fauna located within and adjacent to wetland areas.

For example, frogs require both aquatic and terrestrial habitats to live; their eggs are laid in terrestrial environments in refuges around the margins of depressions. Impacts of drainage on frogs include the loss of prey species,

the loss of breeding sites and, as a result, reducing the population of adult frogs.