

Glossary

Atmosphere: The layer of gases surrounding the Earth (or any other planet). This acts as a blanket to keep our planet warm enough for us to live on it and holds the oxygen we need to breathe. Atmosphere make up: 78% nitrogen, 21% oxygen, remaining 1% is a mix of other gases.

Biologically unsustainable fishing: Rate at which fish populations are depleted by fishing is greater than the rate at which the population can reproduce; so the fish stock is unable to maintain its population.

Biosphere: The part of the Earth system which is made up of the global ecosystem of living organisms (plants and animals) and their relationships.

Bycatch: Fish, marine mammals, and seabirds which are accidentally caught in fishing gear that then go to waste.

Carbon dioxide: A naturally occurring gas made up of one carbon atom attached to two oxygen atoms. It is a greenhouse gas, trapping heat in our atmosphere. Elevated levels of atmospheric carbon dioxide result in the trapping of too much heat in our atmosphere.

Carbon sequestration: The process of capturing atmospheric carbon dioxide, to remove it from the atmosphere and store it. This occurs naturally when plants photosynthesis, but can also be carried out artificially with emerging technology.

Carbon sink: Ecosystems and artificial reservoirs which store carbon dioxide and methane removed from the atmosphere than they release to the atmosphere. Examples of natural carbon sinks are forests, soil, and oceans. An example of an artificial carbon sink is the storage of compressed carbon dioxide, captured by technological devices, by way of pumping it underground.

Carbon source: Ecosystems, processes and artificial reservoirs which release more carbon dioxide and methane to the atmosphere than they remove. Examples include the burning of fossil fuels, forest fires, respiration and decomposition of organic matter.

(Note carbon sequestration is the process by which the carbon dioxide is captures, the carbon sinks and sources are reservoirs where it is stored and released from.)

Climate change: The longer term shift in the typical, average weather patterns experienced around the world or in a specific place.

Coal: Black rock predominantly made from compressed plant matter which is burned as a fuel to produce heat and electricity.

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Coral bleaching: The loss of the colourful algae (called zooxanthallae) that live on corals, which give the corals their colour and act as a the corals' food source, when the surrounding water gets too hot. If the algae remain detached for too long, the corals can die.

Cryosphere: The part of the Earth system which is made up of frozen water, i.e. snow, glaciers, sea ice, ice sheets and ice shelves.

Dead zone: Marine environment where oxygen levels are so low that area can no longer support a full ecosystem.

Deoxygenation: The decrease in oxygen content, in this case, in the ocean. As the ocean gets warmer, less oxygen is able to be dissolved in the ocean, so oxygen is outgassed from the ocean back into the atmosphere. This leaves less oxygen in the water column for animals to use for their bodily functions.

Dissolve: Become incorporated into a liquid.

Ecosystem collapse: Situation when an entire biological community suffers a dramatic reduction in the populations of its species, often to a point they cannot recover from.

Ecosystem: Biological community of interacting organisms and their environment/habitat.

Energy: Power from physical or chemical resources, which we often harness to use for electricity and heat.

Entanglement: The action of getting tangled in something.

Eutrophication: Overloading of nutrients in a waterway (river, lake, or sea).

Food chain /web: Network of organisms that rely on one another as food/energy sources.

Fossil fuel: A burnable substance formed in the geological past from the remnants of plants and animals. Examples of fossil fuels are coal, oil, and natural gas.

Gas: A substance that is neither in solid nor liquid state, instead it has no fixed shape. Examples of gases are oxygen (in the air), carbon dioxide, methane, helium (helium balloons), nitrous oxide (laughing gas).

Global warming: The increase in the planet's overall surface temperature, on average around the world, as a result of human activity adding greenhouse gases to the atmosphere.

Greenhouse gas: A gas which acts to trap heat (like a greenhouse/glasshouse) inside the atmosphere by reflecting the heat emitted by Earth back towards the Earth's surface, rather than letting it escape to space. Examples are carbon dioxide, methane, water vapour, and nitrous oxide.

Hydrosphere: The part of the Earth system which is made up of liquid water, i.e. rivers, lakes, seas, oceans, and rain. Some definitions of the hydrosphere will also include clouds.

Hypoxia: Low oxygen in an environment.

Ingestion: The process of taking in food or liquids.

Mass extinction: The widespread die out of species in a relatively short period of time.

Maximally sustainable fishing: Rate at which fish populations are depleted by fishing is equal to the rate at which the population can reproduce; so the fish stock is only just able to maintain its population.

Methane: A greenhouse gas made up of one carbon atom bonded to four hydrogen atoms. The main source of methane emissions are from the release of natural gas (natural gas is methane) from underground reservoirs (which often happens when trying to extract coal, oil, or the gas itself if there's a leak), agriculture (livestock farting and rice paddies), and the decay of plant waste in solid waste landfills.

Microplastics: Plastic pieces which are smaller than 5mm in size.

Nutrients: Basic substances required by organisms to carry out life processes and grow.

Ocean acidification: The increasing acidity of the ocean. As human activity releases more carbon dioxide to the atmosphere, much of this gas is absorbed by the ocean. The dissolved carbon dioxide then undergoes a series of chemical reactions resulting in a decrease in the pH level of the ocean (lower pH means more acidic).

Ocean: The expanse of salt water which covers 70% of the globe.

Oil: Also known as crude oil or petroleum. A thick black liquid, made up of carbon and hydrogen from compressed decomposed marine organisms. Oil can be separated into useable substances like petrol/gasoline, diesel, jet-fuel, lubricating oil, and asphalt; as well used to make plastics, paint, pharmaceuticals, synthetic fibre, and soap.

Organism: An individual animal, plant, or single-celled life form.

Overfishing: The practice of catching more fish than is sustainable.

Photosynthesis: The process by which plants (and some organisms like phytoplankton) convert carbon dioxide and nutrients into organic matter and energy, and in doing so create oxygen.

Primary consumer: Organism which gets its energy by eating primary producers, ie. is in the second trophic level.

Primary producer: Organism that makes its own energy (most commonly by way of photosynthesis, getting energy from sunlight, but some species also carry out chemosynthesis, getting energy from chemical reactions). Ie. is in the first (lowest) trophic level.

Renewable energy: Energy derived from sources that can be used again and again to harness energy without depleting the supply. Examples are wind energy (harnessed by wind turbines), solar energy (harness by photovoltaic solar panels), tidal energy (dams on estuaries), hydrostations (dams on rivers), geothermal energy (heat from the Earth's core).

Sea level rise: Increase in water level at the coast, resulting in the coast creeping inland as well as salt water intruding further inland underground (pollution freshwater sources and damaging fertile soils).

Secondary consumer: Organism which gets its energy by eating primary consumers, is in the third trophic level.

Solar: Associated with sun.

Sustainable: In the most basic sense, ‘sustainable’ means able to be maintained. The word is often used in terms of ‘sustainable practices’ referring the more eco-friendly processes, but is used in many different ways, with different concerns about what is needing to be maintained, so one should always use/interpret it carefully!

Thermal expansion: The increase in the volume that water that takes up when it is warmed.

Tipping point: The point at which a series of small changes no longer have small consequences, but instead amass to a critical point past which they cause a significant, larger change. This larger change is generally seen to be much harder to reverse or fix.

Top predator: Organism which gets its energy by eating secondary consumers, ie. is in the forth trophic level.

Toxin: Something that is poisonous.

Trophic cascade: When the crash in a species at one trophic level causes the subsequent sequential collapse of the species in other trophic levels which rely on it.

Trophic level: Position of an animal in the food chain, shared by other species with the similar predator-prey interactions.

Underfished: Rate at which fish populations are depleted by fishing is less than the rate at which the population can reproduce; so the fish stock is able to comfortably maintain its population.

Unstable: Variable, unpredictable, not stable.