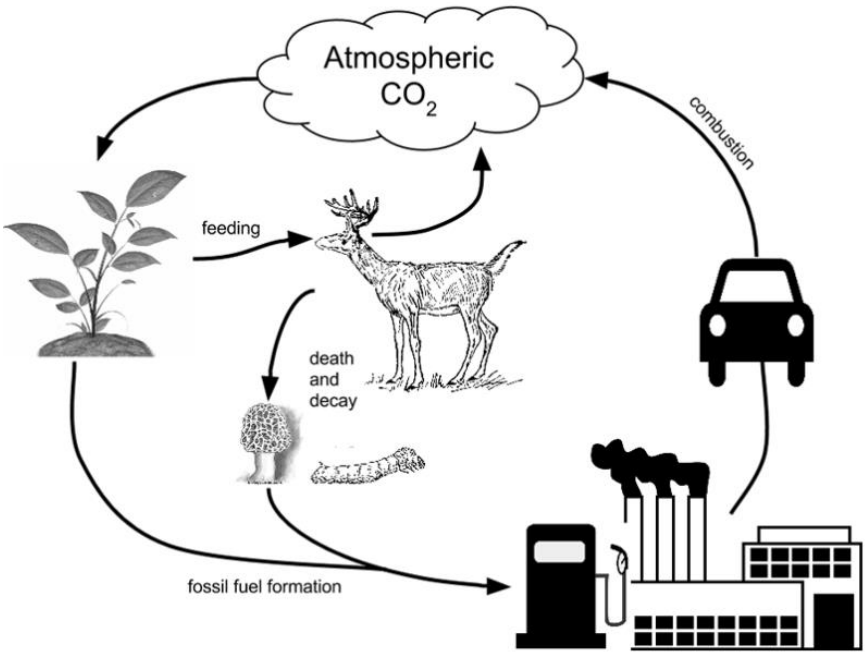
Major elements cycles in nature:

Carbon cycle

The **carbon cycle** is the biogeochemical cycle by which carbon is exchanged among the biosphere, pedosphere (soil), geosphere, hydrosphere, and atmosphere of the Earth. Along with the nitrogen cycle and the water cycle, the carbon cycle comprises a sequence of events that are the key to making the Earth capable of sustaining life; it describes the movement of carbon as it is recycled and reused throughout the biosphere.

The *global carbon budget* is the balance of the exchanges (incomes and losses) of carbon between the carbon reservoirs or between one specific loop (e.g., atmosphere <-> biosphere) of the carbon cycle. An examination of the carbon budget of a pool or reservoir can provide information about whether the pool or reservoir is functioning as a source or sink (stored) for carbon dioxide. The carbon cycle was initially discovered by Joseph Priestley and Antoine Lavoisier, and popularized by Humphry Davy.

Carbon is present throughout the natural environment in a fixed amount. It takes many forms and moves through the environment via the carbon cycle.



The Carbon Cycle

The amount of carbon on the earth and in Earth's atmosphere is fixed, but that fixed amount of carbon is dynamic, always changing into different carbon compounds and moving between living and nonliving things. Carbon is released to the atmosphere from what are called "carbon sources" and stored in plants, animals, rocks, and water in what are called "**carbon sinks**." This process occurs in a number of steps. In the first step, through photosynthesis (the process by which plants capture the sun's energy and use it to grow), plants take carbon dioxide out of the atmosphere and release oxygen. The carbon dioxide is converted into carbon compounds that make up the body of the plant, which are stored in both the aboveground parts of the plants (shoots and leaves), and the belowground parts (roots). In the next step, animals eat

the plants, breath in the oxygen, and exhale carbon dioxide. The carbon dioxide created by animals is then available for plants to use in photosynthesis. Carbon stored in plants that are not eaten by animals eventually decomposes after the plants die, and is either released into the atmosphere or stored in the soil.

Large quantities of carbon can be released to the atmosphere through geologic processes like volcanic eruptions and other natural changes that destabilize carbon sinks. For example, increasing temperatures can cause carbon dioxide to be released from the ocean.