The Four Spheres of the Earth

One way for us to examine the interaction between biotic and abiotic factors in ecosystems is to think about the interaction of the four spheres of the earth.

1. Lithosphere
   - This is the solid outer layer of the Earth
   - Since the lithosphere includes the soil, it provides habitat for many organisms

   How do humans impact the lithosphere?
   a) Deforestation (Negative Impact)- When humans remove trees and their roots from the ground this can increase soil erosion because the roots are no longer present to prevent soil from washing away. Removal of trees at a large scale can also mean less organic matter is being returned to the soil which can decrease soil nutrients.

   Add 2 more examples of your own to this list. Identify the impact as either positive or negative and explain the impact fully

2. Hydrosphere
   - The hydrosphere consists of all of the water on the Earth's surface and the earth's atmosphere
   - 97% is salt water in the Earth's oceans; 3% is fresh water (but only a small amount of this is available for use)
   - Since all living organisms need water, all organisms depend on the hydrosphere

   How do humans impact the hydrosphere?
   a) Building on shorelines (Negative Impact)- Building along shorelines can lead to contamination of water resources as building materials leach into water.

   *Add 2 more examples of your own to this list. Identify the impact as either positive or negative and explain the impact fully
3. **Atmosphere**
- The atmosphere is the layer of gases that surrounds the Earth
- 78% nitrogen, 21% oxygen, 1% trace gases (eg. Carbon dioxide and water vapour)

*How do humans impact the atmosphere?*

a) Using excess electricity (Negative Impact)- Many types of electricity generation involve the burning of fossil fuels (such as oil and coal). Wasting electricity means that more fossil fuels are burnt, releasing more harmful gases into the atmosphere.

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*Add 2 more examples of your own to this list. Identify the impact as either positive or negative and explain the impact fully*

4. **Biosphere**
- The biosphere is the part of the Earth where life exists including water, land and air
- The lithosphere, hydrosphere and atmosphere interact to create the physical environment of the biosphere

**Diagram Showing the Interaction of the Four Spheres of the Earth**