

Renewable & Non-renewable Resources - Teacher Background



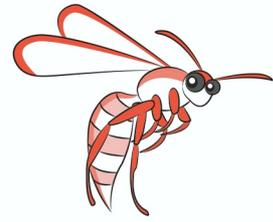
Our Earth processes cycle materials between reservoirs in the atmosphere (air), hydrosphere (water), biosphere (living things) and lithosphere (rocks). Matter is neither created nor destroyed but may be reassembled in different forms. The hydrogen which was once part of a water molecule may be used by a plant to make starch which is eaten by an animal to create its fat supplies and on the death of the animal be buried deep in sediment to become part of an oil molecule, only to be burned and become part of a water molecule again. We tend to use the term “renewable” if the resource is replenished on a human time scale. Modern humans have only been around for less than 200,000 years.

The Sun, which is the source of all energy used on earth, either directly as sunlight, wind and heat or trapped in fossil fuels, is consuming its own hydrogen and will eventually swell and engulf the Earth in about 5 billion years. However, since that is a long time in human terms, it is considered a renewable resource. Our planet’s ability to re-create complex materials and the speed of their replenishment varies. The environmental conditions necessary for deposition of our vast reserves of iron ore in Western Australia no longer exist since plants released oxygen into our atmosphere over a million years ago. Iron ore and most other minerals are considered a finite resource and non-renewable. Fossil fuels are being used at a rate that far exceeds their rate of replenishment (a rate of many millions of years) and are also considered non-renewable. Resources that are continuous such as sunshine, wind and waves are considered renewable. Resources such as biomass, soil, water and forests are considered sustainable as long as the rate of use does not exceed the rate of replenishment.

The major resources on Earth are water, air, living things, rocks (including minerals and fossil fuels), soil and energy from the Sun.

Australia is rich in both living and non-living resources.

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Teacher Vocabulary

Resource Something that is useful to living things.
Renewable resources can be replenished within a human time scale.
Non-renewable resources cannot be replaced once they have been used or require very long (geologic) periods of time to replenish.

Reserve A known quantity of a resource.

Possible sequence of activities:

1. Resources For Schools

- Resources For School – Student Activity
- Human Resources For School – Student Activity

2. Earth's Resources

- Earth's Resources – Student Activity

3. Timescale For Renewal

- Timescale For Renewal – Student Research

4. Resource Use & Sustainability

- Paper Aeroplanes – Teacher Notes

5. Revision

- Renewable & Non-renewable Resources – Student Review