

World Energy Sources

Syll. Statements 8.2.1-8.2.6

Energy Sources

- **Primary Energy**: primarily some form of fossil fuel
 - Fuel in its initial form: coal, crude oil, gas
- **Secondary Energy**:
 - Energy sources produced from primary energy sources
 - Electricity, unleaded gasoline, etc.

Renewable vs. Non-renewable

- **Non-Renewable Energy Source**:
 - The energy source will eventually be completely used up and will run out.
 - Even if there is still some of the energy source left, it will not be cost-effective to use it, so it essentially has been "used up"
 - Examples:
 - Coal; oil; natural gas; nuclear materials

Renewable vs. Non-renewable

- **Renewable Energy Sources**:
 - The source of the energy cannot be "used up"
 - The source of the energy is replenished so that there is a relatively constant supply of the source.
 - Examples:
 - Solar power (photovoltaic cells)
 - hydroelectric power
 - Wind; biofuels

Energy Density

- Allows different fuels to be compared

$$\text{energy density} = \frac{\text{energy released from fuel}}{\text{mass of fuel consumed}}$$

- Units: $\text{J}\cdot\text{kg}^{-1}$

THE primary source...

- Nearly all sources of energy are originally derived from the radiation from the sun in one way or another.
- Radiation from the sun is used in photosynthesis by plants
- Plants also remove carbon dioxide from the atmosphere, and are what is known as "Carbon stores" as a result.