

Energy

Slide	Index
1	Introduction
2	Energy
3	What is Energy?
4 – 7	Renewable vs Non-Renewable:
4	Renewable Energy Sources
5	Non-renewable Energy Sources
6	World's Energy Sources
7	The Hot Issue
8	Greenhouse Effect
9	Environmental Impact
10	SA Energy Supply

Slide 2: *Energy*

Slide 3: *What is Energy?*

- Energy can be defined as the capacity to do work.
- Energy is all around us.
- We can see light energy from the sun.
- Energy cannot be created or destroyed, it can only be transformed.
- Heat energy from the sun keeps us warm.
- We can see the kinetic energy of the wind causing a door to slam.
- The chemical energy stored in food sustains life.
- Energy is needed to make cars move, and make music.
- Without energy, the world would be cold and dark.

Slide 4: *Renewable vs Non-Renewable: Renewable Energy Sources*

- We are using energy from both renewable and non-renewable resources.
- A renewable energy resource comes from supplies that replenish themselves.
- Most of these energy sources limit environmental impacts:
 - Sun
 - Wind
 - Water
 - Biomass
 - Geothermal

Slide 5: *Renewable vs Non-Renewable: Non-Renewable Energy Sources*

- Fossil fuels are hydrocarbon compounds in the crust of the earth that have developed from decomposed plant and animal matter over millions of years.
- Fossil fuels are called non-renewable energy supplies because they cannot be replenished.
- Fossil fuels contain chemical potential energy.
- Combustion is the most common way of converting the chemical potential energy into kinetic energy (work).

- Oil, coal and gas are fossil fuels and are non-renewable.
- Burning fossil fuels releases greenhouse gases.

Slide 6: *Renewable vs Non-Renewable: World's Energy Sources*

- Energy drives modern society.
- Currently most of the world's energy is derived from non-renewable resources.

Slide 7: *Renewable vs Non-Renewable: The Hot Issue*

- Modern society is totally dependent upon energy in the form of electricity derived from burning fossil fuels.
- Burning fossil fuels releases a gas called CO₂ (carbon dioxide) which increases the greenhouse effect.
- Carbon is the basic building block of all fossil fuels. When fossil fuels are used, the carbon reacts with the oxygen in the atmosphere to form carbon dioxide, which is then released into the atmosphere.
- This depletes the oxygen levels in the atmosphere.

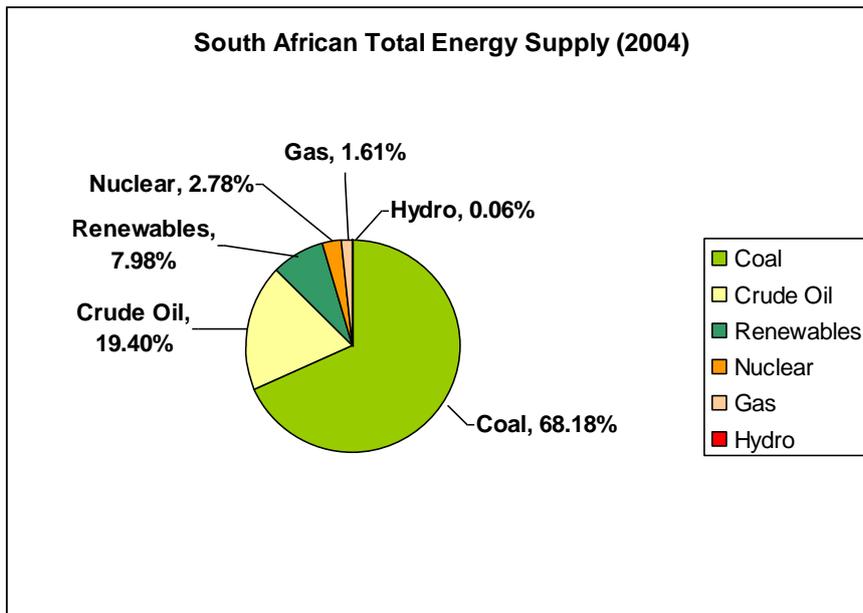
Slide 8: *Greenhouse Effect*

- When the sun's energy has passed through the earth's atmosphere, some of it escapes back into space.
- Some of this energy is trapped by certain gases in the atmosphere, thus keeping the earth warm enough to sustain living things.
- This is called the greenhouse effect.
- CO₂ is very good at trapping heat in the atmosphere.
- Burning fossil fuels has increased the amount of CO₂ in the atmosphere, trapping more heat and making the earth warmer than it should be.

Slide 9: *The Environmental Impact*

- Because of fossil fuels we have increased the levels of CO₂ and other greenhouse gases, thus trapping more of the sun's heat and raising global temperatures.
- This is known as global warming.
- Global warming is thus a rise in the average temperature of the earth's atmosphere which will eventually cause climate changes.
- Rising sea and air temperatures are slowly melting the ice in the Arctic and Antarctic.
- When the earth's average temperature rises because of global warming, the temperature of the sea also rises. When the temperature of water rises, there is an increase in volume, which in turn causes sea levels to rise.
- The ice melting in the arctic areas has very little effect on the rising sea levels.
- In the long term, the effects of global warming may cause climate change.
- This will have far-reaching effects on us, our food supply, and the whole natural world.
- Using renewable energy would mean that very little CO₂ would be released, thus reducing the impact of global warming.

Slide 10: South African Energy Supply



Ref: <http://af.wikipedia.org/wiki/Eskom> 2004