



ADVANTAGES

of renewable energy

- Many types of renewable energy (sun, wind, waves) can be produced forever, whereas coal and other fossil fuels cannot be replaced once they have been burned.
- Many kinds of renewable energy produce zero or very small levels of carbon emissions and therefore reduce the total amount of greenhouse gases which alter the climate.
- Thousands of new jobs can be created in factories making solar power panels and wind turbines
- South Africa's air and rivers will be fresher and cleaner because there would be less pollution from coal smoke and acid water from coal mines.
- By installing solar water heaters, solar panels or mini wind-turbines on the roofs of their homes, ordinary people can reduce the amount of money they pay for electricity.

PLANET IN PERIL

What is Renewable Energy?

At the moment, nearly 80% of the world's electricity and heat energy comes from fossil fuels (coal, oil and gas) – and when they run out they can't be replaced. Burning these fuels also creates the growing cloud of greenhouse gases which are heating up the world and threatening to create dangerous levels of climate change.

Surprisingly, humanity is now turning more and more of these fossil fuels when the technology is available, today, to create cleaner and greener energy from renewable fuels. Most of the fuel from renewable energy is replaced naturally every day, like the rays of the sun, the waves in the sea or the winds which blow across the world.

DISADVANTAGES

of renewable energy

- The sharp spinning blades of wind power farms can kill birds, bats and insects and disrupt bird migration. Large wind farms can also cause visual pollution and scar the beauty of wild places.
- Large areas of land are needed to produce large volumes of electricity from the sun and the wind.
- Even large areas of land are needed to grow bio-diesel fuels, reducing the amount of land for people to grow food.
- The wind does not blow for 24 hours a day, nor does the sun shine at night, reducing the amount of energy that can be stored until technology improves.
- The cost of building and maintaining several renewable energy stations is still more expensive than coal energy, but clean energy will become cheaper as technology improves and gets more government support.



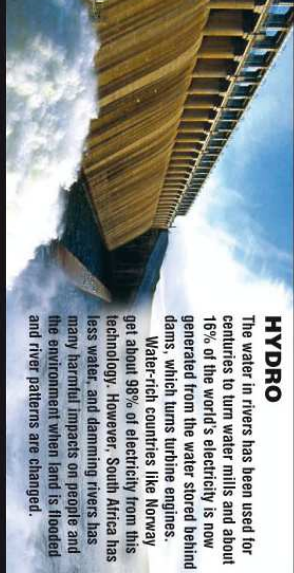
BIOFUEL

Liquid and solid fuels can also be made from ordinary crops like maize and sunflowers. Known as biological (bio) fuels, this kind of energy can also be made from kitchen scraps, cow dung, sugar cane, human sewage, grass, animal fats or vegetable oils. Many cars in Brazil already run on a mixture of petrol and ethanol made from sugar cane. Though bio-fuels can make a big contribution to energy, this would mean wasting large areas of land to grow petrol and diesel crops instead of food for people.



HYDRO

The water in rivers has been used for centuries to turn water mills and about 16% of the world's electricity is now generated from the water stored behind dams, which turns turbine engines. Water-rich countries like Norway get about 98% of electricity from this technology. However, South Africa has less water, and damming rivers has many harmful impacts on people and the environment when land is flooded and river patterns are changed.



SEA POWER (WAVES AND TIDES)

The world's oceans contain vast quantities of energy which can be converted into electricity. The first known wave-power machine was designed in Paris in 1739 and there have been many experiments since then to capture the power of sea waves and tides.

The first commercial wave farm was opened in Portugal in 2008 and there are many other experimental machines such as the Oyster wave energy converter, the Wavechub, Poseidon and the Wave Dragon.



THE MERCURY

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- USEFUL LINKS:
- Durban COP 17 website: www.cop17durban.com
 - Ethekwini Municipality website: www.durban.gov.za/durban/services/epcop17
 - <http://sreen.lpc-wg3.de/report>
 - KZN Sustainable Energy Forum website: www.kznenrgy.org.za
 - Wind map: www.kznenrgy.org.za/projects.asp?cat=2



RENEWABLE ENERGY COULD PROVIDE NEARLY 80% OF THE WORLD'S ENERGY

Earlier this year, a group of 120 scientists working for the United Nations published a report which says it is possible to stop burning fossil fuels and start making as much as 77% of the world's electricity and energy from renewable energy just 40 years from now.

The report was done for the Inter-governmental Panel on Climate Change, which gives expert scientific advice to the governments of the world. It says that if world governments choose to support the change-over, it would be possible to produce between 15% and 77% of the world's energy from renewable technologies by 2050.

As things stand today, only about 13% of the world's energy comes from renewable technology, but some countries are moving much faster towards renewable energy. The German state of Schleswig-Holstein gets about 40% of electricity from the wind, while Spain already gets about 3% of its electricity from solar power farms.



IS SOUTH AFRICA DOING ENOUGH ABOUT RENEWABLE ENERGY?

Almost 90% of South Africa's electricity comes from coal, with the rest coming from nuclear energy (5%), hydro-power (5%) and a tiny fraction from wind and biomass.

In 2003, the South African government set a target to produce about 5% of our energy from renewable sources by 2013, and earlier this year a fresh target was set to produce 42% of all new electricity generated in South Africa from renewable energy by 2030.

However, this figure has been questioned by analysts, who say that the real target is closer to just 9% of total electricity (existing and new expansion projects).

About 65% of the remainder will still come from coal and 20% from nuclear power twenty years from now.

Yet experts from the Energy Research Centre at the University of Cape Town think there are no technical reasons why South Africa cannot make at least 55% of electricity from solar power alone by 2050 because the Northern Cape has lots of sun and cloudless skies for most of the year.

SAVING ENERGY TO SAFEGUARD OUR WORLD

(WARNING: Solutions to difficult problems are not always simple and easy!)

Even if energy can be produced in a way that does not change the world's climate, this does not solve many other serious problems caused by using huge volumes of electricity. All energy sources (even "clean" energy) drive the machinery and wheels of a modern industrial economy that relies on never-ending growth — on a planet which is already running out of space, water and clean air for its nearly 7 000 000 000 human inhabitants.

1. THINK hard about how you and your family can change the future of the world, not just now, but also when you leave school, get your first job, start a family and get the fight to vote.
2. The good news is that there are a few easy things you can do now to reduce some greenhouse gases. The bad news is that the biggest problems will be much harder to fix and involve some tough and unpopular choices.
3. Remind your parents that it is their children and grandchildren who will have to face the biggest problems in the future.
4. Tell your parents, teachers and politicians that the longer we delay or ignore the problem the more difficult it will become to solve it.
5. Switching off the lights in the house when you don't need them will help to save electricity and reduce some greenhouse gases. So will switching off the TV and other electrical appliances at the wall socket or buying energy-efficient appliances and timer-switches.
6. You can also save electricity and reduce climate changing gases by encouraging your parents to buy a solar water heater.
7. Rather than driving in a car, use a bus, train or bicycle to get to school and work because one person in a car creates more greenhouse gases than 100 people sharing a bus. But not every town or city has good public transport and very few have safe bicycle lanes. How can that be changed?
8. The bad news is that switching off extra lights, catching public transport or planting a few trees will not reduce the biggest volume of climate changing gases from our largest industries. These are some of the toughest problems you have to find a way to fix.
9. The good news (and the bad news) is that the problem of human-induced climate change only started about 200 years ago. If you are worried about your future you have to learn and understand what has gone wrong in that time — and start thinking how the modern economy can be changed into a system that values ordinary people and the natural world. Should life be just about making money and buying and selling new things?

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SOLAR (SUN) POWER

Sun power seems to be the most promising way to resolve world energy demands. Prof Daniel Nocera of the Massachusetts Institute of Technology estimates that more sun energy strikes the Earth's surface in one hour of each day than the energy used by all human activities in one year.

The main problem with solar power is that the sun does not shine at night, but experiments are being done to store sunlight captured in the day so that the energy can be used at night.



Ethekwini Municipality's Shisa Solar programme is a discount scheme to encourage Durban residents to install solar water heaters and save up to 30% on their electricity bills.

For more details visit www.shisasolar.org.za

WIND

This ancient technology has been refined over the past few decades. The blades on some modern wind turbines are almost as wide as the wing of a 747 jumbo jet. Denmark is a world leader, with 20% of its electricity already coming from wind power. Ethekwini recently did a study to find the best places for wind farms around Durban.



Durban

