

biogas can be used as a replacement for fossil derived gas for cooking and heating and can also be used to generate electricity. Southern Africa has a number of biogas digesters installed, mostly in rural homesteads or institutions as demonstration projects.

## USING THE WIND

Wind energy is harnessed, as wind rotates turbine blades that drive a generator to produce electricity. A single 1 MW (Mega Watt) turbine on land can provide enough electricity to power 225 to 300 households. In South Africa, there are wind farms, with a combined capacity of 1984MW, feeding into the grid. Small micro-wind generators can be installed on buildings.

## GEOHERMAL

Geothermal energy comes from heat within the earth. It can be used to produce steam to drive turbines and produce electricity. South Africa not have the geothermal resources that Kenya has, where geothermal energy contributes to 15% of Kenya's energy mix.

## SPEAK OUT

**Raise your voice and educate your friends & family:**

- Discuss energy at faith community meetings
- Do an energy audit of your place of worship



- Install renewable energy at your faith community, retirement or children's home or local school
- Host a hot box or solar cooking demonstration
- Ask local councillors to promote renewable energy
- Call for safe public transport & cycle paths

## MORE INFORMATION

For more information about:

**Energy trends internationally:** [www.iea.org](http://www.iea.org)

**State of renewables internationally:**

[www.ren21.net/ren21activities/globalstatusreport.aspx](http://www.ren21.net/ren21activities/globalstatusreport.aspx)

**Tips on how to save energy:**

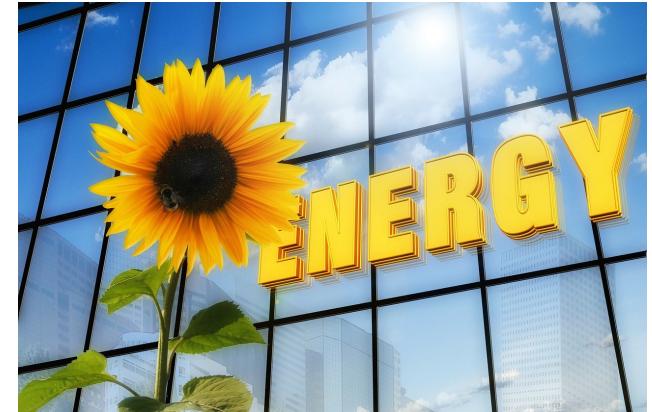
[www.capetown.gov.za/EN/ENVIRONMENTALRESOURCEMANAGEMENT/ENERGYEFFICIENCY/Pages/PracticalSteps.aspx](http://www.capetown.gov.za/EN/ENVIRONMENTALRESOURCEMANAGEMENT/ENERGYEFFICIENCY/Pages/PracticalSteps.aspx)

**Installing renewables:**

There are a variety of companies that install renewable energy, such as PV and solar water heaters. Look for companies with a track record, those that are approved by your local municipality or carry an SABS approval stamp.

There are also companies that offer financial packages that allow you to finance the installation over a number of years, similar to your car or house.

Visit [www.safcei.org](http://www.safcei.org) for contact details and more resources



## RENEWABLE ENERGY

**Why should I be interested as a person of faith?**



## ENERGY AND CLIMATE CHANGE

The Sun provides 20 000 times more energy than the planet needs each day. This energy powers the planet in an inter-connected way that enables us to live our daily lives.

Today, we use this energy in the form of electricity. More than 90% of South Africa's electricity is generated from coal. International research has found that burning fossil fuels (coal, oil and gas) releases greenhouse gases, e.g. carbon dioxide (CO<sub>2</sub>) and methane, into the atmosphere. This has dramatically upset the delicate balance of the Earth's ecosystem.

As a result, the world's climate is changing, and we do not know what all the future consequences of this change will be. Scientists agree that climate change will be catastrophic if serious collective action is not taken.

## WHY SHOULD PEOPLE OF FAITH BE CONCERNED?

All faiths have a common calling to care for, protect and sustain creation for this and future generations. People of faith recognise that everything belongs to God and to protect "earth's vitality, diversity and beauty is a sacred trust" (Earth Charter).

## OUR ADDICTION TO FOSSIL FUEL

Our current economic path depends on energy, often in the form of electricity for our daily needs: Imagine having no lights, no electronic appliances, no packaged food, no cars or goods made in factories. Our needs include hot water, cooking and space heating as well as TVs, computers and cellphones. Therefore, we are increasingly dependent on electricity. This electricity is generated from fossil fuels and a small amount of hydro and nuclear.

We use energy to power cars, taxis, buses, trains to move between work and home and trucks, aeroplanes and ships to transport goods. This energy is based on oil—refined into petrol or diesel.

## IF WE DON'T USE COAL, WHAT OTHER ENERGY IS THERE?

Coal, gas, oil and uranium are non-renewable resources. When we have used up as much as it is possible to extract, we will have to look for new forms of energy. The serious impacts of climate change give us a good reason to change to other forms of energy as fast as we can.

## USING THE SUN

You can feel the sun's energy on summer days. Designing buildings with north facing windows provides natural light and heat for warmth in winter. Overhanging roofs/frames/furnishings shield windows to provide shade in mid-summer. But the sun can do more than this!

### Concentrated Solar Power (CSP)

Concentrating the power of the sun (instead of burning coal) to make steam to drive turbines, new generation solar power plants (CSPs) use the sun's heat to generate electricity. Modern solar power plants track the sun with moving mirrors to collect maximum heat. Some have energy storage systems or 'batteries' which store day-time heat in molten salt and use it to generate electricity at night when there is no sun.



### Solar photovoltaic panels (solar PV)

PV panels are made of solar cells which use sunlight energy to make electricity through a chemical process. Rooftop solar panels can power appli-

ances in homes or buildings directly or feed electricity into the grid. Large scale solar farms feed into the national grid like any other large power station.



### Solar water heating (SWH)

Solar water heaters use the sun to heat water. Hot water is stored in insulated geysers ready for use on site.



## USING WOOD & BIOFUELS

Burning wood or plants for heat or to make electricity releases carbon dioxide into the atmosphere, while growing plants and trees absorb CO<sub>2</sub> from the atmosphere. If we grow enough trees to absorb the carbon dioxide we produce, it is possible to be 'carbon neutral'. Deforestation is a major challenge as removing too much material tips the balance, and smarter ways of accessing energy are needed. We can use some plants to make oil or alcohol based 'biofuels' to replace fossil fuels in cars. But using cropland for fuel reduces food production. Should crops be used to power cars instead of feeding people? We need creative thinking to solve our transport problems. Electric cars & fuel from waste, as well as moving to public transport such as trains, are possible options.

## OCEAN CURRENTS, TIDES & WAVES

The movement of the sea, through tidal, wave and ocean, power can be harnessed to generate electricity. Internationally, there are a few demonstration plants.

## BIOGAS

Biogas comes from the breakdown of organic material such as food scraps, animal & other natural waste, in a closed system without oxygen. The