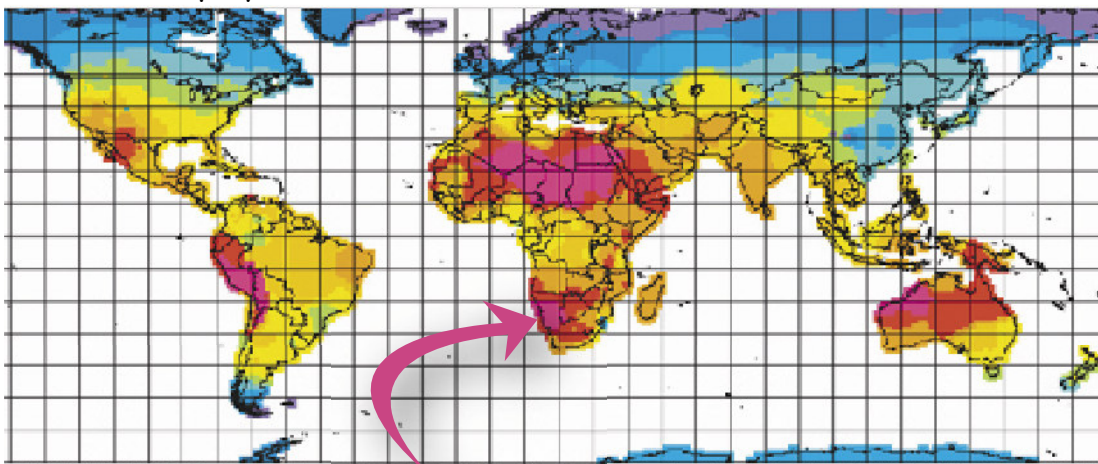


Can you notice how solar energy affects your life?

- Seeing during day time
- Seeing during full moon
- Drying clothes
- Harvesting fruit
- Collecting firewood
- Swimming in a river
- Driving in a car
- Flying a kite
- Reading a newspaper
- Drinking a cup of tea
- Seeing a rainbow

The sun is a star in our solar system. Our earth revolves around it. It consists largely of hydrogen (about 75%) and helium (about 25%). Within the centre or core of the sun, hydrogen is transformed to helium. This happens in a nuclear fusion process, at temperatures of about 13.6 million degrees Celsius! Vast amounts of energy are released which radiate outwards into space. The energy reaches earth in the form of electromagnetic radiation.

- Solar energy causes wind, plant growth and is the most basic form of energy used by all life on earth.
- Coal, oil and natural gas come from dead plants from millions of years ago. This is fossilised solar energy.
- Solar energy is renewable which means it is a sustainable energy source that cannot be used up by humans.



Namibia is one of the sunniest countries on Earth with a solar radiation of about 6 kWh per m² per day (or 100x60W light bulbs in 1 hour).



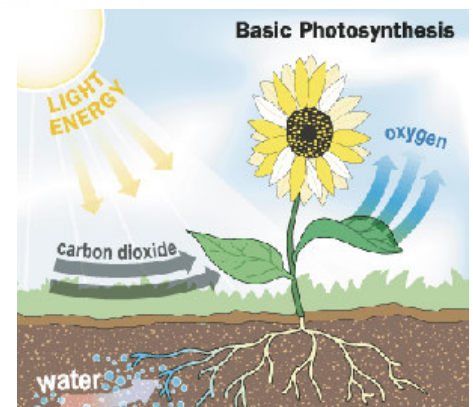
Solar energy is measured in WATT (W) per SQUARE METER (m²) per second.

1,000 W equals 1 KILOWATT (kW).

Solar energy can be directly transformed into four useful forms: Chemical energy, heat, electrical energy and mechanical energy

Chemical Energy

Green plants (biomass) transform solar energy into chemical energy, contained in sugar and cellulose, through the process called photosynthesis. This is chemically stored solar energy.



Electrical Energy

A solar photovoltaic cell is a device that converts photons (light) into electrical energy. The electricity produced is useful for a range of electrical appliances such as lights, radios, televisions, refrigerators, water pumps, cell phone chargers or power tools. It is however not cost effective to use this electricity for heating appliances like kettles, irons or stove, because a vast number of solar photovoltaic panels would be required.



Heat

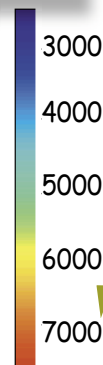
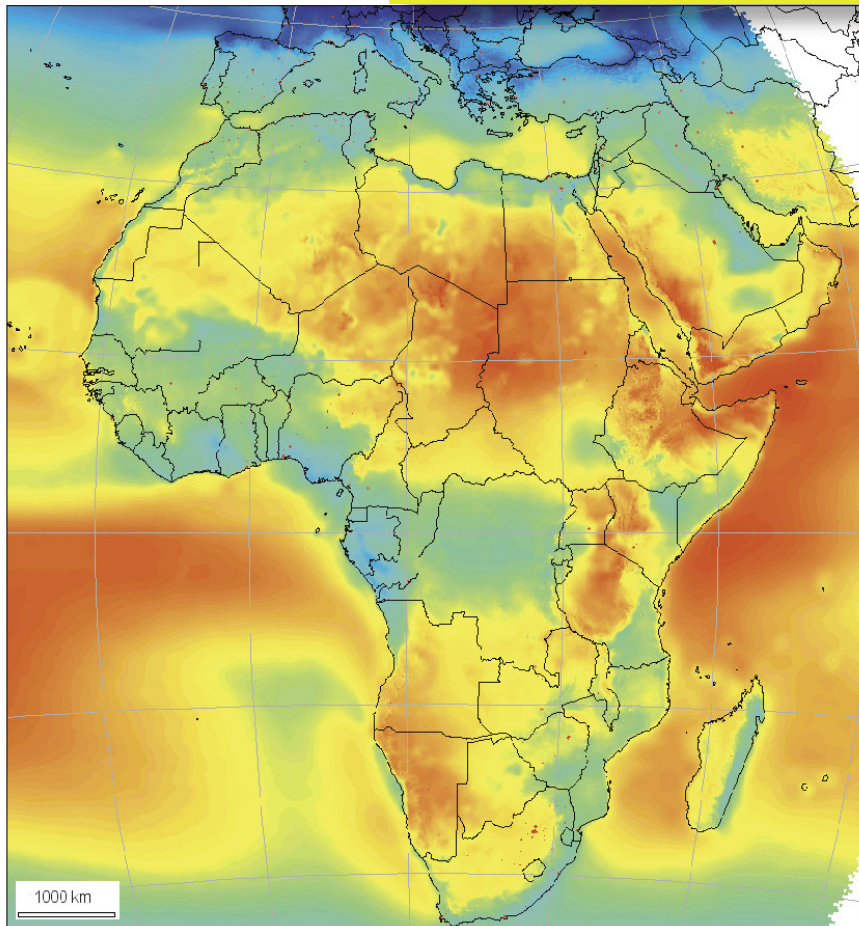
Solar devices that heat include technologies which are used for drying, water heating, space heating, cooking, generation of steam and distilling of water. These devices achieve heating through:

Absorbing solar radiation on a dark surface, especially black. This is used for solar box cookers and solar water heaters.

Concentrating solar radiation onto a small area. This principle is used by solar parabolic cookers and solar applications for generating steam.

Solar energy technologies

Solar home systems Solar water pumps
Solar hybrid systems Solar water heaters
Solar power stations Solar cookers



Namibia's solar insolation is twice as high as most of Europe.

average Wh/m²/day

Mechanical Energy

Mechanical forms of energy derived from the sun include water power and wind power. The sun powers the water cycle and air circulation. Flowing water and wind have been used to operate mechanical energy technologies like water wheels and wind mills for thousands of years.



Additional Information

http://en.wikipedia.org/wiki/Solar_energy

<http://www.history.rochester.edu/class/solar/solar.htm>

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