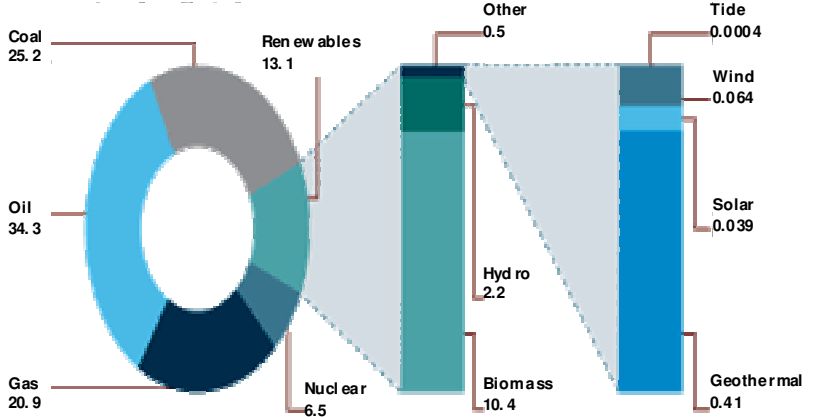


Several renewable energy technologies exist that can **generate electricity on a large scale** for residential, commercial and industrial users. Proven large-scale renewable energy power technologies include:

- **Wind Power Plants**
- **Hydroelectric Power Plants**
- **Solar Thermal Power Plants**
- **Photovoltaic Power Plants**
- **Biomass Power Plants**

World total primary energy supply, 2004, %



Wind Power Plants

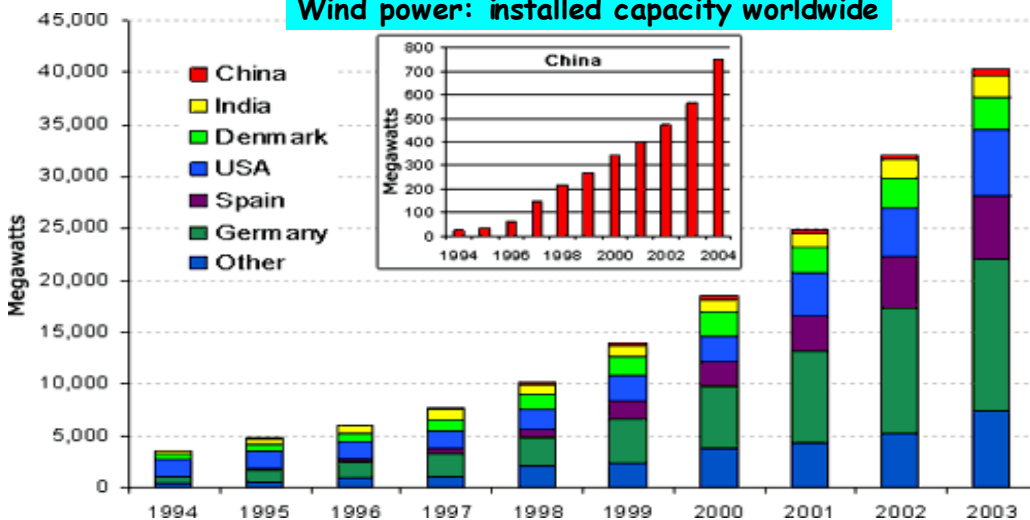
Wind power plants, or wind farms, are clusters of wind turbines used to produce electricity. A wind farm usually has dozens of wind turbines scattered over a large area, where wind **speed** and **duration** are favourable. Namibia's coast line, especially south of Walvis Bay, offers excellent wind resources ideal.

Since wind speed, duration and constancy of wind increases with height, turbines are tall structures. The most serious environmental drawbacks to wind turbines may be their negative effect on wild bird populations, the visual impact on landscapes and noise pollution.

Wind power is the fastest growing of the energy sources in the world.



Wind power: installed capacity worldwide



Hydroelectric Power Plants

Hydropower is currently the largest and least expensive source of renewable electricity produced.

Most hydropower projects use a dam and a reservoir to retain water from a river. When the stored water is released from the dam, it passes through, and rotates turbines which spin generators to produce electricity.

Large hydro power plants have a significant environmental impact though since they flood large areas above the dam, while negatively affecting water-based natural cycles below the dam.



Solar Thermal Power Plants

Solar thermal power plants use the sun's rays to heat fluid, from which heat transfer systems are used to produce steam. The steam, in turn, is converted into mechanical energy in a turbine which then generates electricity.

The most common types of solar thermal power plants are:

Solar Trough - solar trough collectors are long v-shaped reflectors that focus heat onto a pipe (containing a gas or liquid) that runs along the focal point.

Solar Dish - a solar dish is like a large solar parabolic cooker. Concentrated solar heat is reflected onto an engine mounted in the focal point, which produces electricity.

Solar Power Tower - the solar power tower generates electricity from sunlight by focusing concentrated solar energy using hundreds of flat sun-tracking mirrors called heliostats onto a heat exchange receiver mounted on a tower.



345 MW Solar Troughs, USA



25 kW Solar Dish, Australia



11 MW Solar Power Tower, Spain

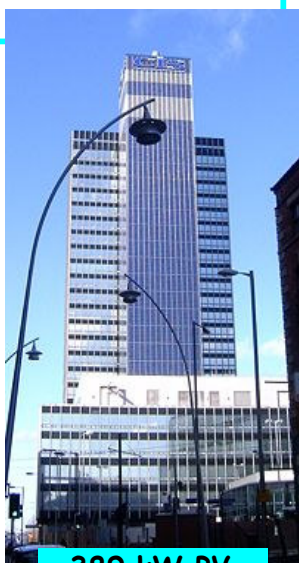
Photovoltaic Power Plants

Photovoltaics (PV) is a technology in which light is converted into electrical energy.

PV modules are commonly used in rural electrification, but can also easily be integrated into buildings to produce electricity.



428 kW PV Power Plant, Germany



389 kW PV Building, UK

Biomass Power Plants

Biomass electrical generation is second only to hydro power as a renewable electricity source. However, biomass, particularly wood, is the most common energy source for most households in the developing world.

Most electricity generated using biomass today is by direct combustion using conventional boilers to produce steam to spin a turbine.

Biomass can also be gasified prior to combustion. Gases generally burn cleaner and more efficiently. In Namibia invader bush can be effectively used for electricity generation.



350 kW Wood Gas Plant, India



2 MW Wood Gas Plant, Germany

Additional Information

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

<http://mnes.nic.in>

<http://www.pvresources.com>

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