

New to Renewables?

Renewable energy is a sustainable form of energy and can be sourced from solar, wind, geothermal, hydropower and biomass sources.

Wind Farms

The turbine blades are designed to capture the kinetic energy in wind. The rest is nearly identical to a hydroelectric setup: When the turbine blades capture wind energy and start moving, they spin a shaft that leads from the hub of the rotor to a generator. The generator turns that rotational energy into electricity. At its essence, generating electricity from the wind is all about transferring energy from one medium to another.

Hydro Electricity

Hydropower plants harness water's energy and use simple mechanics to convert that energy into electricity. Hydropower plants are actually based on a rather simple concept – water flowing through a dam turns a turbine, which turns a generator. ⁱ

Biomass

Living and recently dead biological material that can be used as fuel or for industrial production.

Geothermal

Geothermal energy can be used in three ways:

Direct geothermal energy. In areas where hot springs or geothermal reservoirs are near the Earth's surface, hot water can be piped in directly to heat homes or office buildings.

Geothermal water is pumped through a heat exchanger, which transfers the heat from the water into the building's heating system. The used water is injected back down a well into the reservoir to be reheated and used again.

Geothermal heat pump. A few feet under the ground, the soil or water remain a constant 50 to 60 degrees Fahrenheit (10-15 degrees Celsius) year-round. Just that little bit of warmth can be used to heat or cool homes and offices. Fluid circulates through a series of pipes (called a loop) under the ground or beneath the water of a pond or lake and into a building. An electric compressor and heat exchanger pull the heat from the pipes and send it via a duct system throughout the building. In the summer the process is reversed. The pipes draw heat away from the house and carry it to the ground or water outside, where it is absorbed.

Geothermal power plant. Hot water and steam from deep underground can be piped up through underground wells and used to generate electricity in a power plant. ⁱⁱ

Solar

Photovoltaics, convert sunlight directly into electricity. Photovoltaic (PV) cells are made of special materials called semiconductors such as silicon, which is currently the most commonly used. Basically, when light strikes the cell, a certain portion of it is absorbed within the semiconductor material. This means that the energy of the absorbed light is transferred to the semiconductor. The energy knocks electrons loose, allowing them to flow freely.

UK Government Renewable Energy Targets:

The UK Government has committed to a target of generating 15% of all energy from renewable sources by 2020.

This is aligned to the UK's target to reduce CO2 emissions by 80% by 2050.

Based on the fact that the UK has approximately 40% of Europe's entire wind resource, it is not surprising that a big push to deliver wind projects has emerged.

How do I start a renewable energy project?

The process of successfully consenting and developing a renewable energy project is complex.

A typical project may have several stages:

1. Site Selection
2. Feasibility
3. Public Consultation
4. EIA
5. Public Inquiry
6. Planning Consent
7. Protected Species Licensing
8. Planning conditions
9. Construction

It all seems so complicated?

The legislative and statutory obligations can seem daunting, however, with experience of the full project lifecycle and knowledge of localised systems and processes, we can help you kick start your project, or advise on a specific element.

All forms of energy production and use have implications for the environment. Our distinct mix of expertise and experience ensures that we deliver commercially and environmentally sound projects efficiently and with minimum risk. Contact us to find out how we can help you.

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ⁱ <http://science.howstuffworks.com/free-energy1.htm>

ⁱⁱ <http://science.howstuffworks.com/geothermal-energy.htm>