

## Energy sources

What is an energy-source, which kinds of energy are there and why are energy sources so important? At this place you learn about sources of energy.

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### What are sources of energy and where are they used for?

An energy source is a system which makes energy in a certain way, for instance a hydro-electric station. A hydro-electric station uses the current of the river for the making of electricity.

Nowadays we need energy-sources for electricity. Without electricity no computers, no television, no washers. A lot of apparatus would not work without electricity.

### Which different sources of energy do we know?

How many energy-sources do we know, below are the most important sources.

- **Nuclear power**

Nuclear power is a form of energy which arise from a reaction between atomic nuclei. Mostly this form of energy comes out of nuclear fission. To explain how this process works, we give a little explanation about the structure of atomic nuclei. Atomic nuclei exist out of neutrons and protons. these little parts (neutrons and protons) are held together in the center of the atomic nucleus through a special energy, called binding-energy. In a process in which the atomic nuclei collide with each other, they fall apart and the loose parts come out of the atomic nucleus. The energy which kept the parts together is not necessary anymore and this energy comes 'free'. At the technique of nuclear fission, atomic nuclei collide with each other in a central boiler to become as much energy out of it as possible. The so called 'binding-energy' falls apart and this energy comes out of the atomic nucleus. This energy is used for heating up water and this water becomes steam. Through the steam a turbine can be driven and so electricity is a fact. The speed in which the atomic nuclei collide is controlled by special rods. These rods can pull atomic nuclei towards them and so there becomes less nuclei, which can collide and then there is less binding-energy to come 'free'.
- **Fossil energy**

Fossil energy is generated through the burning of fossil remains. At this burning the fossil fuel is used as a source of heat to make steam out of water. This steam is used for the working of a turbine. With the help of a generator, this turbine can make electricity. Examples of fossil fuels are oil, natural gas and coal. These fossil fuels are remains of dead materials of plants and animals. These plants and animals died over a million years ago and under the pressure of the earth's surface and through the decay of this material there came a process of compression. Carbon is the main part of these fossil fuels, the more carbon, the heavier the fuel.
- **Alternative energy**

Alternative energy is a form of energy without waste-matters. It is also a form where the source, which delivers the energy, is endless. Some alternative energy-sources are sun-, water- and windenergy. By all these forms of alternative energy, existing energy (like water, wind and sun) is used for the making of electric energy. For instance, a hydro-electric station makes use of the fall between a lake and a river. They build a flood

control dam between the lake and the river. And in the one outlet of the dam they build a turbine. This turbine activates a generator and the water energy is transformed into electric energy. More information about alternative energy can be found in the article about [green energy](#).

### **What are the pros and cons of different sources of energy?**

The three different kinds of energy-sources have their own pros and cons. In this part we give a few of them.

- **Nuclear power**

For the generation of nuclear power little raw material is needed to generate a lot of electric energy. This is an advantage, because the supply of the raw material will be enough for quite a time. A very big disadvantage is that the raw material for nuclear power, uranium, is very radio-active. Also the used rods and other used materials stay radio-active for ages. At a nuclear power plant as Chernobyl we have seen how dangerous this type of energy-generation can be. This is the major reason why environmental groups (like Greenpeace) are against this form of energy-winning.

- **Fossil energy**

The big advantage of fossil energy is that, to generate the energy from the raw material is easy and cheap. Disadvantage is that during the process of combustion a lot of toxic materials comes into the air which causes extra pollution of the atmosphere, these materials also increase the effect of [global warming](#). Another disadvantage of fossil energy is that the supply of fossil fuels is not endless. The current supply is for approximately 50 years. That is why the USA wants to drill for oil and natural gas in Alaska. If the USA do this, there are big consequences for the environment. For more information about this subject, go to the article about [exhaustion](#).

- **Alternative energy**

The advantage of alternative energy is that the energy source is endless and doesn't give any pollution. Still, there are not many alternative energy forms, because for instance the technique to transform sun-beams into electric energy is very expensive. For more information about alternative forms of energy-winning, go to the article about [green energy](#).