

The different types of production of electric power

What is the electrical sector?

The Electrical Sector is the set of companies and organisms that make possible for us to have electricity at any time.

Who are the actors of the electrical sector?

The bad boys:

- Electrical Companies.
- Banks.
- Insurances Companies.

Our protectors: Probably?

- Department of Industry.
- Nuclear Security Council. (CSN).
- National Commission of __Energy. (CNE).
- Operator of the electrical market.

Which are the functions of the previous organisms? (I)

- Electrical Companies.
- Banks.
- Insurances Companies.

Officially through advertising:

To work to obtain a better world...

...I want to cry when I listen to this...



But....

Actually they work:

To earn money always
independently from the citizens'
problems



Which is the function of the previous organisms? (II)

- Department of Industry.
- Nuclear Security Council. (CSN).
- National Commission of Energy. (CNE).
- Operator of the electrical market.

Officially:

They work to protect the citizens, as the captain America.



Actually:

They don't do a lot of things, they are almost always late for everything and don't have enough means to control private companies



How is electricity generated?

- The electric power is generated in the electric power stations.

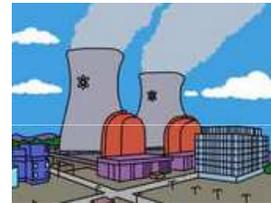
How many types of power plants are there?

- There are many types of electric power stations that are divided into two big blocks.

- Renewable power.



- Non- renewable power.



Which is the difference between these electric power stations?

- The renewable energy plants use fuel that do not become exhausted in ___ nature. These power plants are not contaminated or polluted
 - The non-renewable plants use fuel that will disappear in the future. They are very polluting, more than renewable plants.

Advantages and disadvantages of _____ renewable energies

- The advantages of _____ renewable energies are:
 - These plants are very clean.
 - They generate a social economy, especially in rural zones.
 - They don't pollute as much as _____ non-renewable energies.
 - They don't avoid the greenhouse effect on the planet.
- The disadvantages of _____ renewable energies are:
 - These energies are very expensive.
 - For example, _____ we usually pay between 40 and 80 € for the power/electricity bill a month in a house. If in Spain all the electricity were renewable we should pay three or four times more, that is, between 120 € and 320 € a month. This is not possible, our minimum salary is 640 €, and we can't afford to pay half of it for electricity.
 - A world with only renewable energies is very complicated, we would have many electricity cuts.

Advantages and disadvantages of non-renewable energies

- The advantages of non-renewable energies are:
 - These energies are very cheap, the generated electricity is the cheapest.
 - They create a lot of jobs.
 - Non-renewable centrals pay many taxes.
 - Non-renewable energies are more reliable than renewable energies.
 - Non-renewable energies prevent power outages (from taking place).
- The disadvantages of non-renewable energy are:
 - Non-renewable energies are very pollutant.
 - Non-renewable energy increases the greenhouse effect.
 - Non-renewable energy generates many international conflicts such wars, especially because of oil.

Different types of renewable power (I)

- **Electric power stations of biomass**

Material fuel coming from agriculture, forests, etc. is used to make these electric power stations function/work. These power plants are very beneficial for rural areas.

- **Wind Power Plants**

These power plants can transform the speed and power of the wind into electrical energy. Its operation is based on the ancient watermills(*).

- **Photovoltaic Power Plants**

These plants can convert solar energy into electrical energy, the material used in photovoltaics is silicon. This material is very expensive and polluting. These are more expensive to build plants. A very important advantage is that we can use the photovoltaic technology to install it in our house.

- **Hydroelectric plants**

It uses the energy of the water stored in a reservoir for electricity. It is very expensive to build, and it has very much environmental impact because one great territory is necessary to flood.

(*) watermills: molinos de agua

Different types of renewable power (II)

- **Geothermal Plants**

The geothermal plants use the heat of the water that is stored underground to produce electric power. The main plants of geothermal energy are in the countries of northern Europe.

- **Energy of the waves(*)**

The continuous movement of the waves moves a turbine, the turbine generates electricity, and the electricity is transported by underground cables to the coast. These plants are very expensive and produce little electricity.

- **Plants of urban waste**

Modern society produces more and more garbage or urban waste. The plants of solid urban waste burn the garbage and generate water steam to move the turbine and this turbine produces electricity. These plants are normally situated far from the cities because they give off bad smells. They are very cheap and the fuel is also very cheap.

(*) waves; olas

Different types of non-renewable power (I)

- **Nuclear power plants**

They are the most important plants in the electrical system. Why?

- They are the most powerful.
- These plants produce the cheapest electricity.
- They avoid power cuts.
- Nowadays this type of plants are necessary for the good functioning of the electrical system.

Which are the problems of these electric power stations?

- These are very dangerous.
- The nuclear fuel (uranium) can be very polluting for thousands of years.
- The uranium generates conflicts between countries, for example, Mali is the main supplier of uranium to France.

Different types of non-renewable power (II)

- **Thermal electric power stations**

- The operating capacity of these plants is very similar to the one of nuclear power stations.
- The only difference is the fuel they use. In nuclear plants the uranium is used and in thermal plants they use coal, gas or fuel oil.
- The thermal power stations are very pollutant because they increase the greenhouse effect.
- The electricity produced in these facilities is very cheap and these plants pay a lot of taxes to the government.

How do these plants (nuclear and thermal) work?

- In a boiler they heat water pressure, the water is at a very high temperature and the pressure moves a turbine and it produces electricity.

After saying this I am going to explain:

Production of energy in Spain

- **Non-renewable energies: 55 %**

- Nuclear power : 15 %.
- Gas thermal power stations: 29 %.
- Coal and fuel thermal power stations: 11 %.

- **Renewables energies: 45 %**

- Wind power: 16%
- Solar power: 8%
- Hydroelectric power: 9%
- Energy of the biomass and waste: 12%

Important note: In Europe and the rest of the world, the percentage of renewable energy is less than in Spain

Truths and lies about energy

- Spain hasn't bought the electricity to France since 2004.
- Spain produces more electricity power than it needs and the electricity is sold to Morocco, Portugal and France.
- A world with only renewable energy is not possible nowadays for two reason:
 - The current electrical system needs nuclear and thermal energy to avoid powercuts.
 - If Spain had only renewable energy, the middle class citizens couldn't pay their electricity bills.
- Nuclear power stations have many not programmed stops and damages.
- You can see the damages in the following link:
http://www.csn.es/index.php?option=com_content&view=category&layout=blog&id=48&Itemid=121&lang=es
 - In January, 2013 (this month) there have been three breakdowns (for the moment).
- Renewable energy it is not a type of energy for all citizens, only the very rich people can have this type of energy.

Images of electric power stations (I)

- In these images we can see different nuclear power stations:
 - Nuclear power station.



- Thermal power station



Images of electric power stations (II)

- Wind power station



- Photovoltaic power station



- Thermal solar power station



The end

- Thank for your attention