

Sources of energy in Portugal



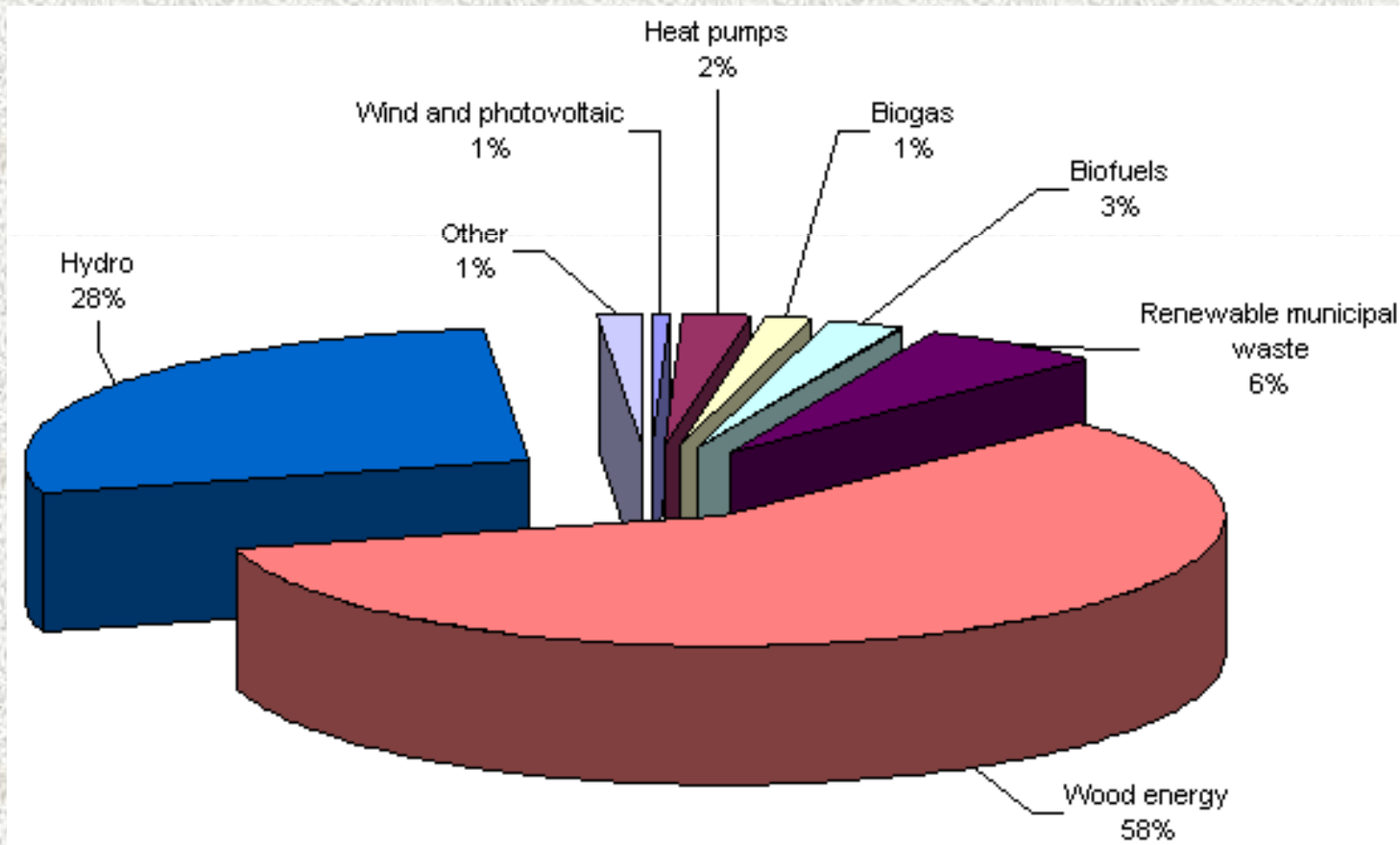
“Renewable
energies”

Introduction

Non-renewable energy sources or conventional sources of energy lead to a reduction of resources. They are regarded as finite resources, whose use is unsustainable in the long term.

Renewable energy sources cover a range of technologies, with different degrees of development. Some of them, such as hydropower, the wind and biomass (including waste management), have already reached a state of considerable maturity and are, under certain circumstances, commercially competitive with the equipment of converting fossil fuels. It should be noted that in Portugal, wind power has increased significantly in recent years.

What are they?



* Renewable energy refers to all sources of energy whose consumption rate is lower than its rate of production. According to this definition agricultural, urban and industrial waste are also considered sources of renewable energy, because they are produced at a speed that surpasses that of consumption.



Portugal

The total number of licensed renewable power is concentrated in the north of the country, mainly because of the location of large water and a significant number of wind farms.

The districts of Lisbon, Leiria and Castelo Branco have strong winds; more than 50% of renewable power come from these districts.

In 2005, Portugal was the sixth European country with greater incorporation of renewable energy. At the end of January 2007, Portugal had 6975 MW of generation capacity of electricity from renewable sources.

Until 2012, it is expected that the total investment in renewable energy in the country will reach 8.1 billion euros.

Types of renewable energies :

- Solar energy
- Wind energy
- Geothermal energy
- Wave power
- Hydropower
- Biomass

Solar energy

- What is it about ?
- In Portugal ?



Portugal has one of Europe's greater availability of solar radiation (the average number of annual hours of sun, varies between 2200 and 3000, whereas, for example, in Germany varies between 1200 and 1700 hours).

Thus, Portugal has excellent conditions for the photovoltaic conversion. The conversion of sunlight into useful energy can be accomplished through photovoltaic, to directly produce electricity through photovoltaic cells.

Photovoltaic systems produce electricity with high reliability and its maintenance is low, limiting itself, in essence, to the system of accumulation of energy in the case of autonomous systems. There are also known the environmental benefits of such systems, which emit no greenhouse gases and produce no noise.

The Photovoltaic Project Centre of Moura, sponsored by Ampere, provides an addition of the panels installed power of 62 MW and an output to be injected in the network of 49.6 MW. It began in 2006 and it is expected that the plant will be operational within 3 years. With a planned investment of approximately 250 million and an area for installation of 114 hectares of panels, the plant, which will be installed in the Amareleja village, will be the largest solar photovoltaic centre of the world.

But nowadays the title of the largest solar photovoltaic centre of the world belongs to the core of Serpa, inaugurated in March 2007 with a total power of 11 MW.

The Photovoltaic Solar Central of Serpa produces enough power to feed eight ten hundred homes. With this project, greenhouse gas emissions will be less, comparing to equivalent fossil fuel consumption.

Wind energy

- What is it about ?
- In Portugal ?



Portugal has strong traditions in the development of wind energy, since the grain mill to sailing.

The conversion of wind energy into electricity is achieved through a Wind turbine (a turbine driven by the wind that drives a generator of electricity). The main components of a Wind turbine are the tower, the rotor and its blades, and an electric generator.

In Portugal, the first wind farm was established in the Azores archipelago in 1988, but the distribution of these plants almost cover the entire national territory - 106 wind farms and 703 wind turbines.

In 2005, Portugal was the country of the European Union that grew most in the production capacity of wind power. In 2006 the country recorded the second fastest growing, having come into operation 36 new wind farms, meaning a growth of 60% of the installed capacity.

The biggest wind farm in Europe was inaugurated in Monção, in November 26 this year, in Alto Minho. The complex of 120 aerogenerators increases the installed capacity in the region for a total of 290 megawatts and makes this energy-exporting region

- What is it about ?



Geothermal energy

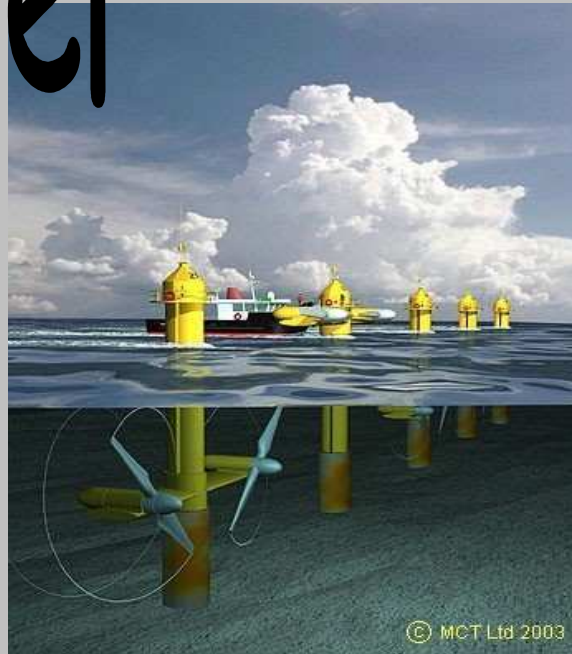
- In Portugal ?

Geothermal energy is the energy available in the form of heat emitted by the earth's crust inside through hot water or water vapour. The utilization of geothermal energy depends on the existence of a fluid carrying the heat of the Earth's interior to the surface.

The exploitations in the area of geothermal are made in the Azores islands (as in San Miguel, Terceira, Faial, Pico, Sao Jorge, Graciosa, Flores and Corvo).

- What is it about ?

Wave power



- In Portugal ?

They have been associated with various forms of ocean energy potentially usable, and the most common, because of their greater potential for use, are those resulting from the conversion of kinetic energy, generated by the tides and waves in power.

Portuguese coastal regions, especially the west coast of the mainland and the islands of the Azores archipelago, are among those with better natural conditions on European and even global, for the enjoyment of wave energy.

In Portugal, the pioneer in research and development in the area of wave energy are two of the few prototypes of industrial dimension: the Pico Island and in Viana do Castelo.

Europe (Portugal, United Kingdom, Ireland, Netherlands, Norway and Denmark) and some other countries (Japan, India, China, Australia and USA) have played a greater role in developing the use of wave energy.

- What is it about ?



Hydropower

- In Portugal ?

It has been accepted that the contribution of small hydropower plants is expected to reach in 2010, 1600 GHz per year.

The potential for use of mini-hydro energy is distributed throughout the national territory, with greater concentration in the north and centre of the country.

Since 1998 and until 1994 there were 120 licensed businesses to use water to generate energy. However, according to the report summary of the Renewable Energy Forum in Portugal, less than half are in operation, representing a total of 170 MW of installed power and an output of 550 GHz per year.

- What is it about ?

Biomass



- In Portugal ?

It should be noted that the conversion process or use of energy from solid biomass, is the first collection of various types of waste that is made, followed by transportation to the places of consumption, where it does the energy for direct combustion.

Among the advantages there is the low cost of acquisition, no discharge of sulfur dioxide, less corrosion of equipment (boilers, furnaces), among others.

In the Thermoelectric Central of Mortágua, located in the centre of the country, on the right bank of the lake of Aguieira, electricity is produced using biomass as the primary fuel.

The Thermoelectric Central of Mortágua began operating in August 1999 and is projected for the disposal of about 80,000 tones years' waste forest burned in a boiler. In 2003, the consumption of biomass in this plant was more than 80,000 tones.



"Non
Renewable
energies"



What are they?

- A **non-renewable resource** is a natural resource that cannot be produced, re-grown, regenerated, or reused on a scale which can sustain its consumption rate. These resources often exist in a fixed amount, or are consumed much faster than nature can recreate them.



Types :

- Petroleum
- Coal
- Natural gas

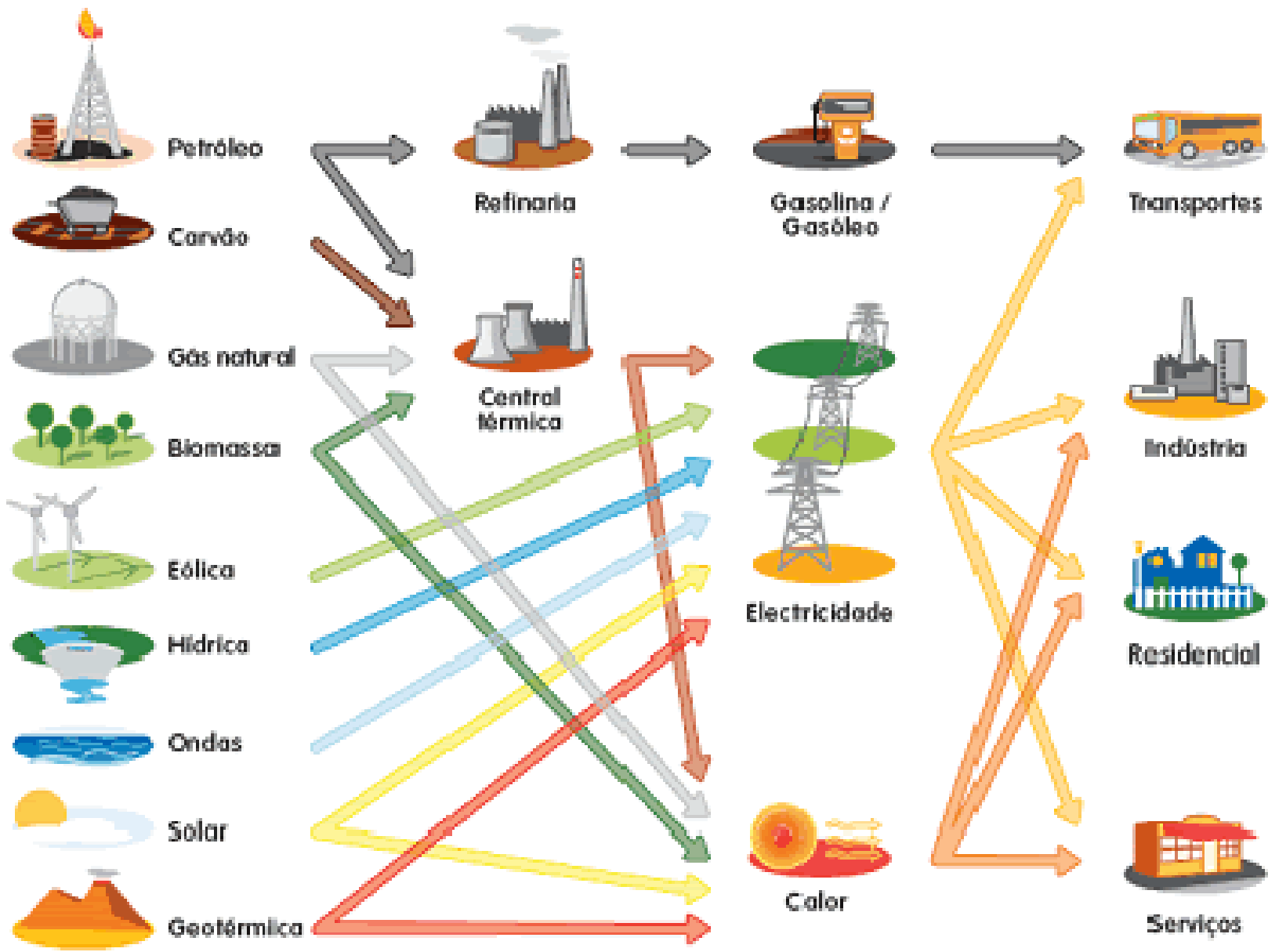


Their rate of use is clearly far higher than the rate of renewal and it is characterized by a deficit in terms of reserves (e.g. oil reserves).

After all, Conventional Energies still have a preferential role compared to "new forms of energy" (Renewable Energy) because fossil fuels are responsible for 80% of the entire supply of energy globally.

Indeed, the energy consumed in Portugal, 81% comes from conventional sources and only 19% stems from the use of renewable sources.

It should be noted, too, that the dependence on energy from abroad is between 85 and 100%.



Conclusion

Portugal is very strongly dependent on the outside: during the 90s, the country imported more than 80% of the energy they consumed.

Renewables have an extremely important role, representing the total domestic production of energy.

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OUR
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Bibliografy/Webliografy

- http://eGeo.ineti.pt/geociencias/edicoes_online/diversos/energias_renov/indice.htm
- [Direcção-Geral de Geologia e Energia \(DGGE\) do Ministério da economia / Renováveis - Estatísticas Rápidas Março 2006 \(DGGE\)](#)
- [Energias Renováveis em Meio Urbano \(www.adene.pt\)](#)
- [Portal das Energias Renováveis](#)
- [Jornal de Negócios](#)
- <http://earthtrends.wri.org>
- www.eia.com/gov

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