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Let's Use Energy Usefully



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Different kinds of Renewable Energy

Wind Energy

Hydro energy

Solar Energy

Geothermal Energy

Oceans

Biomass



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Wind Energy

To Produce energy: wind power plants are installed in places where the average annual wind speed is 6 m/s.

In Portugal that occurs in mountainous areas and near the coasts.



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Hydro energy



Hydric energy is the energy obtained from the potential energy of a body of water



Currently, in the average year, about 25% of the electricity consumed in Portugal is of water origin.



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Solar Energy

The production of electricity using the sun is possible through photovoltaic solar panels or solar thermal panels.



1. electricity is produced directly from solar radiation without contamination or noise;
2. photovoltaic systems can operate at any scale and in any environment;
3. electric energy can be generated at the place where it will be used.



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Geothermal Energy

is the energy obtained from the heat coming from the interior of the Earth

The Islands of Azores produce, by volcanic action, geothermal energy

But: gases end up going into the atmosphere



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Oceans

This power source is being used only as a demonstration and experience. (the cost is very high)



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Biomass



It is the by-products of livestock, agriculture, forestry or timber industry, etc.



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Advantages of Renewable Energies

They can be considered inexhaustible on a human scale compared to fossil fuels;

Their environmental impact is less than that caused by fossil fuels (coal, oil and gas) because they do not produce carbon dioxide or other greenhouse gases;

They offer less risk than nuclear power;

They allow the creation of new jobs (investments in disadvantaged areas);

They allow the reduction of CO₂ emissions and contribute to improve the quality of Life (a clean Air);

They confer energy autonomy on a country, since its use does not depend on the import of fossil fuels;

They lead to research into new technologies that allow better energy efficiency.



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Disadvantages of Renewable Energies

High investment costs and appropriate infrastructure;
Negative visual impacts on the environment;
Biomass energy - the biomass combustion method is not clean;
Hydroelectric Power – it causes soil erosion that may have an impact on local vegetation;
Solar Energy - very high initial costs;
Wave Energy – it depends a lot on the location and is quite expensive;
Wind Energy - the initial cost of the turbines is very high. There is a lot of noise produced.



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A low-angle shot of a wind turbine against a clear blue sky, with the tower and blades extending from the left side of the frame.

PORTUGAL

and Bragança



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In Bragança, we produce, mostly, hydro energy and wind energy



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Electricity Production in Portugal

52.7% is renewable energy

47.3% is fossil energy

total electricity generated is 45 873GWh



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The district of Bragança, with 1000 MW, is the one that registers greater production of electricity from renewable energy sources in Portugal.

In 2015 Portugal was the fourth country of the European Union with greater incorporation of renewable energies in the production of electric energy



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