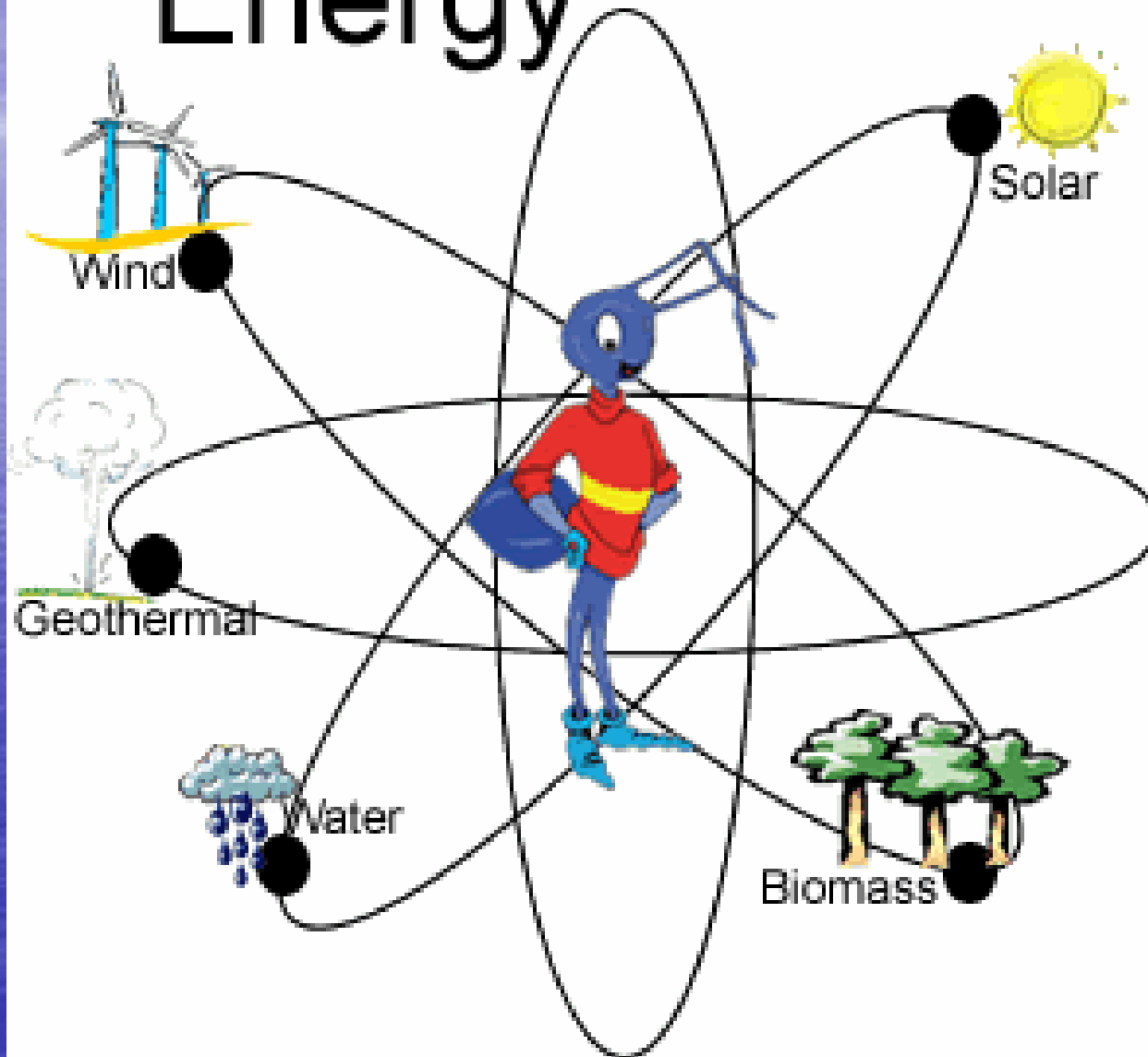


Alternative energy

Projet Comenius 2006/2007 Lycée Saint
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Lat Bret : Alternative Energy

Renewable Energy



More and more people are calling for green power because it may be safer for the environment.

Green power does not pollute the earth.

Renewable Energy is energy derived from resources that are regenerative or for all practical purposes cannot be depleted.

For this reason, renewable energy sources are fundamentally different from fossil fuels, and do not produce as many greenhouse gases and other pollutants as fossil fuel combustion

The five renewable sources used most often include :

- Water
- Solar
- Wind
- Geothermal
- Biomass.

Water

Tidal power, sometimes called tidal energy, is a form of hydropower that exploits the rise and fall in sea levels due to the tides, or the movement of water caused by the tidal flow. Because the tidal forces are caused by interaction between the gravity of the Earth, Moon and Sun, tidal power is essentially inexhaustible and classified as a renewable energy source. Although not yet widely used, tidal power has great potential for future .

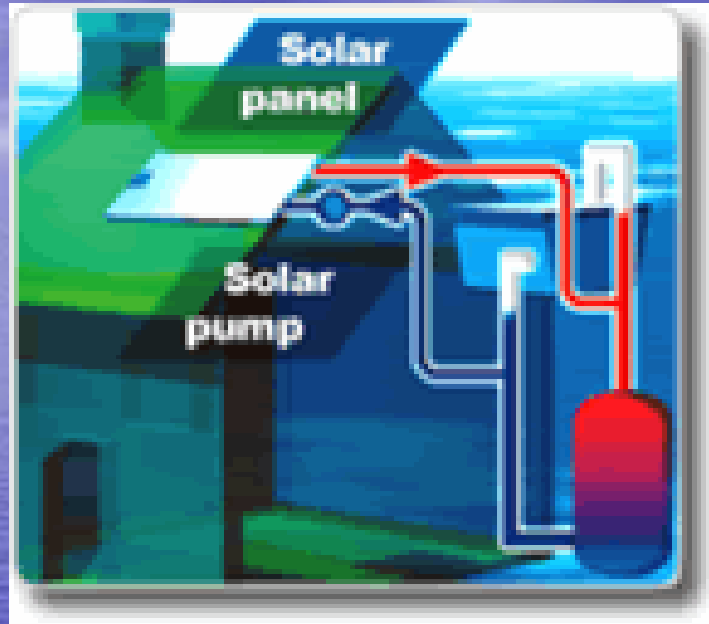


Solar

Solar power (also known as solar energy) is Solar Radiation emitted from our sun.

Solar energy is currently used in a number of applications:

- * Heat (hot water, building heat, cooking)
- * Electricity generation (photovoltaic, heat engines)
- * Transportation (solar car)
- * Desalination of seawater.



Solar panel

Solar thermal panel heats water on your roof.

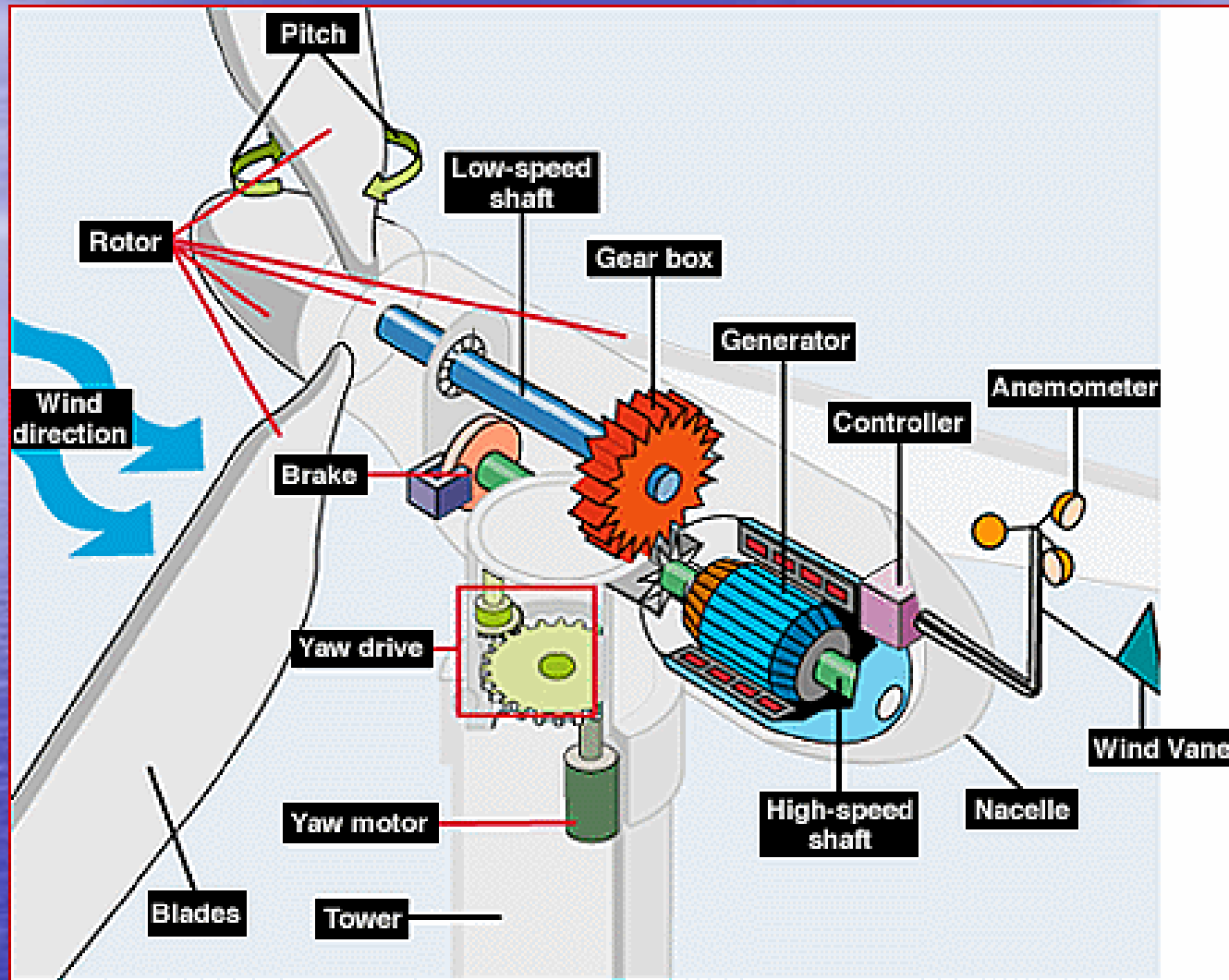
Solar pump

PV powered solar pump pumps to the top of your cylinder

wind

Wind power is the conversion of wind energy into more useful forms, usually electricity, using wind turbines

A **wind turbine** is a machine for converting the kinetic energy in wind into mechanical energy



Geothermal

Geothermal power is the use of geothermal heat to generate electricity. Geothermal comes from the Greek words geo, meaning earth, and therme, meaning heat. Giovanni Conti first discovered geothermal-generated electricity at Larderello, Italy, in 1904.

There are three main ways of tapping geothermal energy:

➤ **Direct use**

Geothermal heat found near the surface of the Earth can be used directly for heating buildings (District Heating - the system that supplies communities with hot water or heating - being the most well known) and for a number of commercial and industrial uses.

➤ **Geothermal heat pumps**

The relatively constant temperature of the top 15 metres of the Earth's surface (or ground water) can be used to heat or cool buildings indirectly. The pump uses a series of pipes to circulate fluid through the warm ground. In the winter when the ground is warmer than the buildings above, the liquid absorbs heat from the ground, which is then concentrated and transferred to the buildings. This can also be used to heat domestic water. In the summer, when the ground is cooler, the pump transfers heat from the buildings back into the ground.



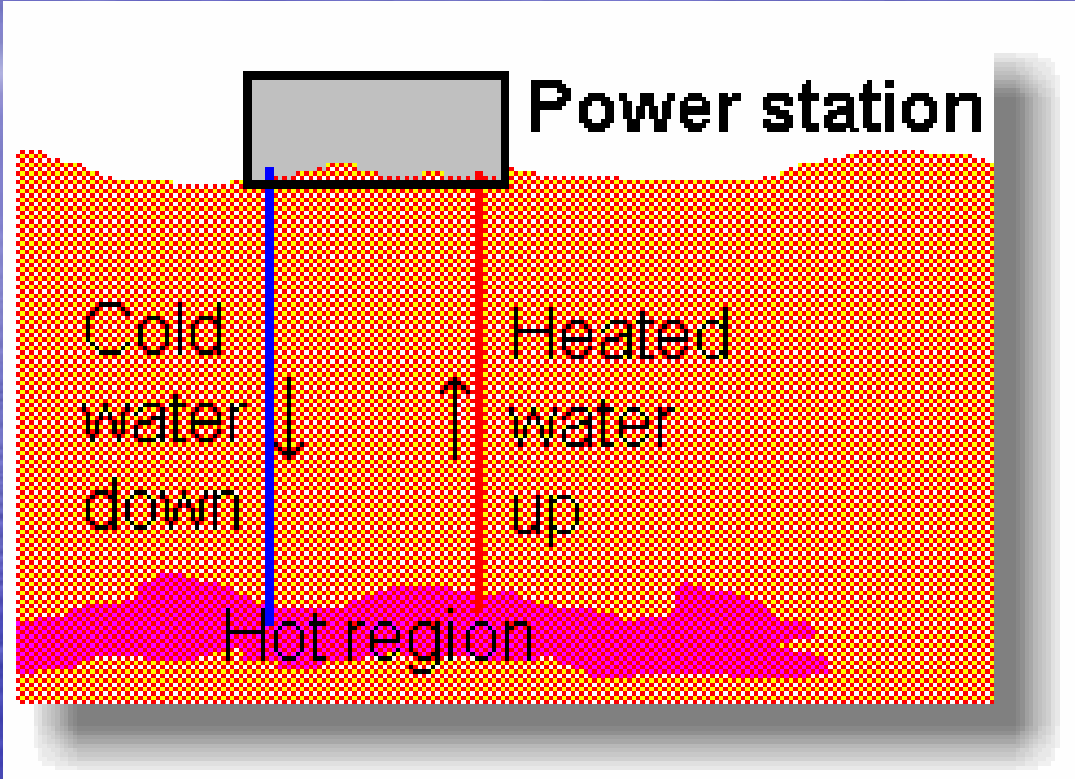
Electricity production

There are three types of power plant that can convert geothermal energy to electricity, depending on the temperature of the geothermal fluid used. All three use a turbine that is driven by steam, which then drives a generator to produce electricity.

How it works

Hot rocks underground heat water to produce steam. We drill holes down to the hot region, steam comes up, is purified and used to drive turbines, which drive electric generators.

There may be natural "groundwater" in the hot rocks anyway, or we may need to drill more holes and pump water down to them.



Biomass

Types of Biomass



Wood



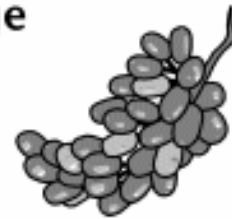
Crops



Garbage



Landfill Gas



Alcohol Fuels

Burning biomass is not the only way to release its energy. Biomass can be converted to other usable .

Another source of biomass is our garbage, also called municipal solid waste ([MSW](#)). Trash that comes from plant or animal products is biomass. Food scraps, lawn clippings, and leaves are all examples of biomass trash. Materials that are made out of glass, plastic, and metals are not biomass because they are made out of non-renewable materials. MSW can be a source of energy by either burning MSW in [waste-to-energy plants](#), or by capturing biogas. In waste-to-energy plants, trash is burned to produce steam that can be used either to heat buildings or to generate electricity.

In landfills, biomass rots and releases methane gas, also called biogas or landfill gas. Some landfills have a system that collects the methane gas so that it can be used as a fuel source. Some dairy farmers collect biogas from tanks called "digesters" where they put all of the muck and manure from their barns.



Alternative energy in Latvia

The Latvian Renewable energy strategy is still under development.

Latvian's energy supply is based on a balance mixture of energy sources, in which renewable sources in 2002 represented 34 % of the primary energy.

In Latvia 19% of the total energy is produced from wood and hydropower.

The solar energy resource potential is small due to the climate conditions and the northern latitudinal location of the country.

OMTK's heat pump

This heat pump, recently installed in Olaine Mechanical College, enables to heat the whole gymnasium.



Biomass near Riga : EKO GETLINI

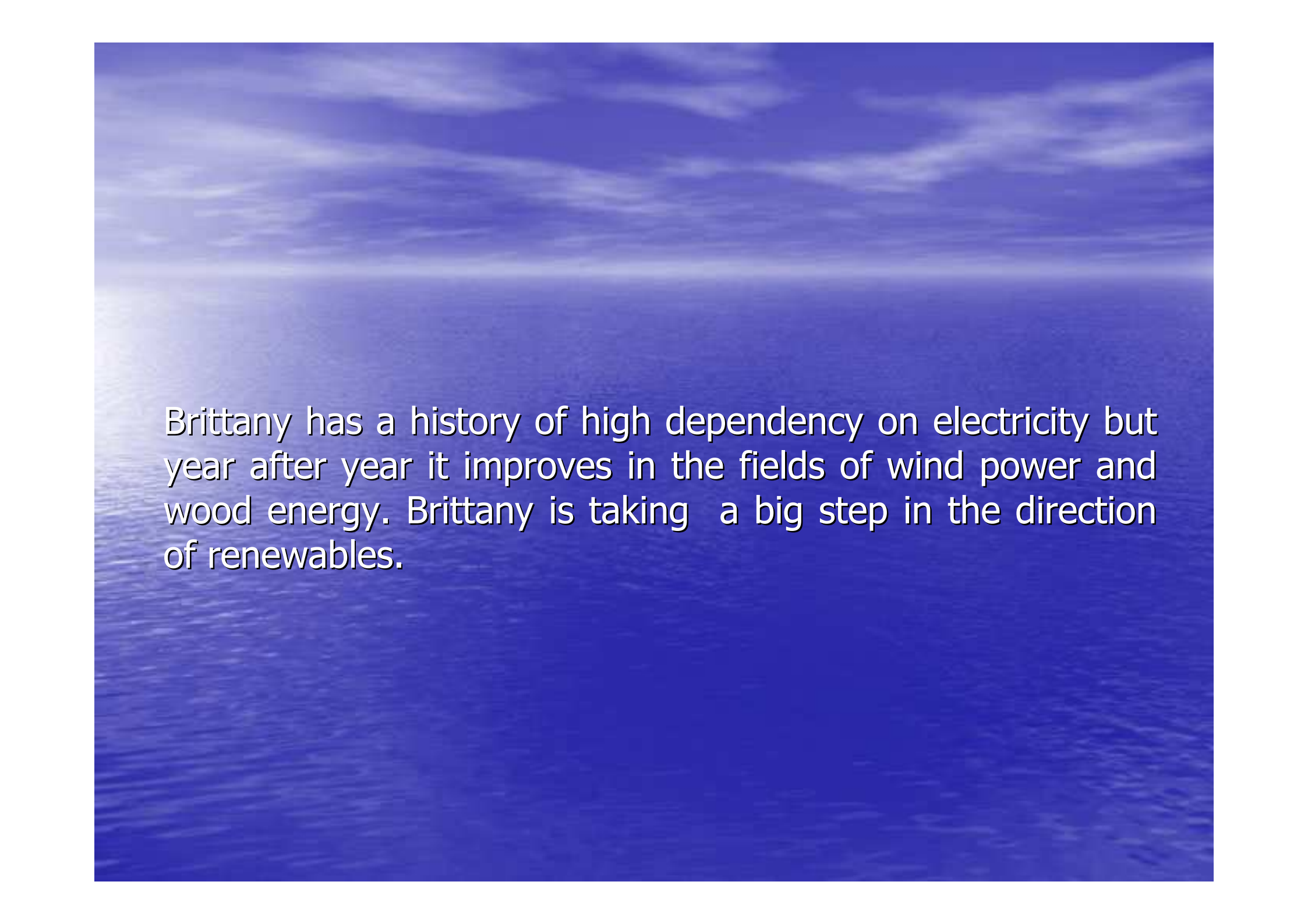
The 'Getlini' refuse site (near Riga) has been in operation since the beginning of the 1970's. By the year 2000, approximately 30 million cubic metres of waste had been deposited there without the performance of any environmental protection measures.

The gas production system installed in the old hill consists of 162 vertical gas wells and 4 regulating stations. Gases are pumped with small intervals through two pumps that are inserted within the energy production block and are connected to the internal combustion engines that drive the generators. The old waste hill is covered with a 0.5m thick layer of clay in order to eradicate the suction of oxygen from the air and to stop the further pollution of groundwater.





Alternative energy in Brittany



Brittany has a history of high dependency on electricity but year after year it improves in the fields of wind power and wood energy. Brittany is taking a big step in the direction of renewables.

The Rance tidal power

The longest-running facility using tidal power as an alternative energy source is the Barrage de la Rance, in operation since 1976 on the tidal estuary of the Rance River in Brittany. The alternative energy created there is enough to supply three percent of Brittany's needs, at 600 million kilowatt-hours each year—or a single one-millionth of the amount of tidal energy released along the world's coastlines every two hours.



The wind farm of Silfiac

The wind farm of Silfiac is in operation since spring 2006. It has been built in not more than 6 months and has the distinctive feature to be built on the soil of the highest commune of the Morbihan department, hence its good wind power potential.



Le parc éolien de Silfiac



Nombre d'éoliennes: 4

Marque : Enercon

Modèle : E 48

Puissance unitaire 800 kW

Puissance totale 3,2 MW

Production annuelle estimée :
7,7 millions de kWh

Consommation équivalente :
9 090 personne (consommation
domestique hors chauffage)

Hauteur du mât : 65 m

Longueur des pales : 24 m

Hauteur totale : 89 m

 Emplacement de la prise de vue.

 Emplacement des éoliennes



1 Km

Biomass IUT Pontivy



Sources

www.wikipedia

www1.eere.energy.gov

www.bbc.co.uk

www.darwill.clara.net

www.eia.doe.gov

www.ekogetlini.lv

A blue-tinted photograph of a vast ocean under a cloudy sky. The text "Help save the Earth" is overlaid in the center in a light blue, sans-serif font with a drop shadow.

Help save the Earth





