ENERGY RESOURCES

Why are they important?
What are they used for?

ENERGY
RESOURCES
TYPES
ENERGY RESOURCES TYPES
NON-RENEWABLE ENERGY TYPES
RENEWABLE ENERGY TYPES
ENERGY RESOURCES TYPES:

1.- NON-RENEWABLE ENERGY RESOURCES
Those forms of energy that have a limited supply (they can be finished). They are also used to provide electricity. They cause the greenhouse effect.

2.- RENEWABLE ENERGY RESOURCES
Those forms of energy generated from natural resources (the Sun, the wind, etc.) and they are mostly used to provide electricity and they don't cause pollution.

Can you give some examples of each one?
1.- NON-RENEWABLE

1.1.- FOSSIL FUELS (coal, oil/petroleum, gas)

1.2.- NUCLEAR FUEL (URANIUM)

1.1- Fossil fuels are organic material made from plants and animals. They contain stored energy from the sun.

1.2- Nuclear fuel. Uranium (common metal found in rocks all over the world) is the most used nuclear fuel. Nuclear plants use a certain kind of uranium, known as U-235. It is very polluting.
2.1 - **Solar energy**: It comes from the Sun. It causes changes in the wind and water and plants use it for the photosynthesis. It is essential for the other resources.

2.2. - **Wind energy**: It comes from the wind. The sun heats the Earth irregularly and this causes winds currents in the atmosphere.

2.3. - **Hydropower energy**: It is generated by the falling of water through a turbine. Turbines generate electricity.

2.4. - **Biomass energy**: It comes from organic matter, for example plants, animals or bacteria. Organic matter can be burned to provide heat or fermented to produce gas.
1. - NON-RENEWABLE ENERGY RESOURCES
ACTIVITY 1. WHAT IS IN THE PICTURES?

1.- Natural Gas
flame (methane)

2.- Refinery

3.- Nuclear
Reactor

4.- Coal

5.- Uranium

6.- Oil pumps

7.- Gas pipes
2. - RENEWABLE ENERGY RESOURCES
2. - RENEWABLE

- SOLAR (sun)
- WIND
- BIOMASS (organic matter)
- HYDROPOWER (water)
ACTIVITY 2. WHAT IS IN THE PICTURES?

1. Hydropower energy (water)
2. Solar (Sun) energy
3. Wind energy (turbines)
4. Biomass energy (organic matter fuel)
5. Solar energy (panels)
ACTIVITY 3. MATCH THE FOLLOWING PICTURES WITH THE RIGHT ENERGY

1. Solar energy (sun)
2. Wind energy
3. Coal (=fossil fuel)
4. Petroleum/oil (=fossil fuel)
5. Biomass energy (=organic matter fuel)
6. Uranium (=nuclear fuel)
7. Hydropower energy (water)
8. Natural Gas (methane) (=fossil fuel)
**ACTIVITY 4.** CLASSIFY THE RENEWABLE OR NON-RENEWABLE ENERGY RESOURCES AND WRITE THEM UNDER THE RIGHT COLUMN.

<table>
<thead>
<tr>
<th>NON-RENEWABLE</th>
<th>RENEWABLE</th>
</tr>
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<tbody>
<tr>
<td>Solar energy</td>
<td></td>
</tr>
<tr>
<td>Wind energy</td>
<td></td>
</tr>
<tr>
<td>Nuclear energy</td>
<td></td>
</tr>
<tr>
<td>Coal (fossil fuel)</td>
<td></td>
</tr>
<tr>
<td>Petrol (fossil fuel)</td>
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<tr>
<td>Hidro-power energy</td>
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</tr>
<tr>
<td>Biomass energy</td>
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<td></td>
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ACTIVITY 5. DRAW YOUR POSTER
**ACTIVITY 6: MATCH THE FOLLOWING WORDS ON THE LEFT WITH THE DEFINITIONS ON THE RIGHT.**

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<tr>
<th>ENERGY</th>
<th>DEFINITION</th>
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<tr>
<td>1. Wind</td>
<td>A. It is a fossil fuel. It is a liquid and it is usually found in underground areas called reservoirs.</td>
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<td>2. Solar</td>
<td>B. It is a fossil fuel. The main ingredient is methane, a gas (or compound) composed of one carbon atom and four hydrogen atoms.</td>
</tr>
<tr>
<td>3. Coal</td>
<td>C. The energy in the nucleus (core) of an atom (tiny particles that make up every object in the universe). There is enormous energy in the bombs that hold atoms together.</td>
</tr>
<tr>
<td>4. Natural Gas</td>
<td>D. It is air in motion. It is caused by the uneven heating of the Earth's surface by the sun.</td>
</tr>
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<td>5. Biomass</td>
<td>E. Fossil energy. It is a combustible, black, sedimentary rock composed of carbon.</td>
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<td>6. Hydropower</td>
<td>F. It is the sun's rays (solar radiation) that reach the Earth. This energy can be converted into other forms of energy, such as heat and electricity.</td>
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<td>7. Nuclear</td>
<td>G. It is organic material made from plants and animals. It contains stored energy from the sun.</td>
</tr>
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<td>8. Oil /Petroleum</td>
<td>H. The amount of available energy in moving water is determined by its flow or fall. Rapidly flowing water in a big river, water descending from a waterfall has lots of energy!</td>
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# Activity 6: Key

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ACTIVITY 7. RUNNING DICTATION. Make groups of 4 students and decide who Student 1,2,3,4 is. When the teacher calls your number, you should run to the teacher and read and memorize a sentence. Then, run back to the group and dictate the sentence. (Runners cannot write the sentence). The first group to finish will be the winner!

1. Energy is used to do many things:
2. Energy lights our cities.
3. Energy is used to warm our homes.
4. Energy powers our trains and planes.
5. Energy plays our music.
6. Energy gives us images on TV.
7. The sun gives us light during the day.
8. Solar energy helps plants grow.
How Can YOU Save Energy?

It's hard to imagine life without electricity. In our homes, we use it to power our lights, appliances, and electronics. Many of us also use electricity to provide our homes with hot water, heat, and air conditioning. There are many ways you can use less electricity right now!
ACTIVITY 8. LET’S SAVE IT! We are going to watch a video about how to save energy in everyday life.

http://www.youtube.com/watch?v=1-g73ty9v04

Discuss with your classmate about the right answer and then answer the following questions individually:
6.- Tick (✓) what do the Superkids do to save some energy:

The Superkids ...

- A. Put the thermostat a few degrees lower.
- B. Turn off lights and electronics (computers, TVs, bulbs).
- C. Use the microwave instead of the oven for cooking.
- D. Take short showers instead of baths.
- E. Turn off water while they brush their teeth.
- F. Ride a bicycle or use public transport.
- G. Do not use the elevator.
- H. Dry their clothes in the sun instead of using a clothes dryer.
- I. Recycle items such as newspaper, aluminum cans and plastic and glass bottles, etc.
- J. Wash clothes in cold water.
- K. Use the right containers to throw plastic, glass recipients, paper, organic matter.
- L. Keep the doors and windows closed properly.
- M. Open the curtains on sunny winter days to let sunshine into their home.
WHAT CAN YOU DO?  SOME GREEN TIPS

✔ Walk, ride a bicycle or use public transport.
✔ Dry your clothes in the sun instead of using a clothes dryer.
✔ Recycle items such as newspaper, aluminum cans and plastic and glass bottles, etc.
✔ Wash clothes in cold water and only in full loads.
✔ Remember to switch off the TV, radio, computer, etc. at the wall. Standby leaks electricity.
✔ Use the right containers to throw used batteries.
✔ Set your thermostat a few degrees lower.
WHAT CAN YOU DO?  SOME GREEN TIPS

- Turn off lights and electronics (computers, TVs, stereos, video-games etc.)
- Use the microwave instead of the oven for cooking your meals.
- Use machines like washing-machine, dishwashers after 8 p.m.
- Open your curtains on sunny winter days to let sunshine into your home.
- Take short showers instead of baths.
- Turn off water while you brush your teeth.
GLOSSARY OF THE MAIN WORDS

- **Biomass energy**: it is the energy that comes from material from living things. For example, plant material, animal material or even bacteria. Organic matter can be burned to provide heat, or fermented to produce gas.

- **Carbon monoxide** is a polluting gas emitted by cars, planes, etc and plants (at night).

- **Coal, oil and gas** are called "fossil fuels" because they are formed from the organic remains of prehistoric plants and animals. They are burnt to get electrical power.

- **Energy** – The ability to do work. Energy is never created or lost but only changed from one form to another.

- **Environment** – The living things, climate, soil, air, and other factors that surround an organism. OR The complex of physical, chemical, and biotic factors (as climate, soil, and living things) that act upon an organism (a living thing) or an ecological community (a collection of living things) and ultimately determine its form and survival. The circumstances, objects, and conditions that surround each of us.

- **Fossil fuels**: are organic material made from plants and animals. They contain stored energy from the sun.
GLOSSARY OF THE MAIN WORDS

- **Fuel**: any material that can be burned to make energy.
- **Global Warming**: An increase in the temperature of the Earth. Today most often used to refer to the warming some scientists predict will occur as a result of increased emissions of greenhouse gases.
- **Greenhouse effect**: The process in which heat cannot escape from the atmosphere and causes the temperature of the Earth to rise. The rise in temperature is called global warming.
- **Greenhouse gases**: Some gases, like carbon dioxide, methane, nitrous oxide, & CFC’s, trap heat in the atmosphere by absorbing long wave radiation while letting the Sun’s energy pass through. The transparent roof and walls of a greenhouse allow the sunlight in while trapping the heat. Since these gases work similarly in the atmosphere, we call them greenhouse gases.
- **Hydroelectric energy**: is generated by the falling of water through a turbine. Turbines generate electricity.
- **Nuclear power**: is generated using Uranium, which is a metal mined in various parts of the world. Nuclear power stations generate electrical power.
GLOSSARY OF THE MAIN WORDS

- **Non-renewable energies**: are those forms of energy that have a limited supply (they can be extinguished). They are also used to provide electricity.
- **Organic**: Coming from plants or animals; generally pertains to compounds formed by living organisms.
- **Pollution**: the damaging air, water, or land with chemicals or other substances.
- **Radioactivity**: a form of harmful energy produced during a nuclear reaction.
- **Renewable energies**: are those forms of energy generated from natural resources (the sun or the wind) and they are used to provide electricity.
- **Safety**: protected from damage or danger.
- **Waste**: anything left over or useless (example: rubbish).
- **Wind energy**: It is the energy that comes from the wind. The sun heats the Earth unevenly and this causes winds.
- **Windmill**: a tall building with long pieces of wood or metal to crash grain or to produce electricity.
Some interesting sources

- http://www.sustenergy.org
- http://ec.europa.eu/energy/
- http://www.youtube.com/watch?v=1-g73ty9v04
- http://www.youtube.com/watch?v=_s9dxc_jVIY
- http://www.youtube.com/watch?v=vss0jRiaZu0
- http://tonto.eia.doe.gov/kids/
- http://www.bbc.co.uk/schools/ks2bitesize/index.shtml
- http://www.videojug.com/tag/green-energy
- http://www.scienceonline.co.uk/energy/renewable-energy.html#hydro
- http://www.darvill.clara.net/altenerg/index.htm