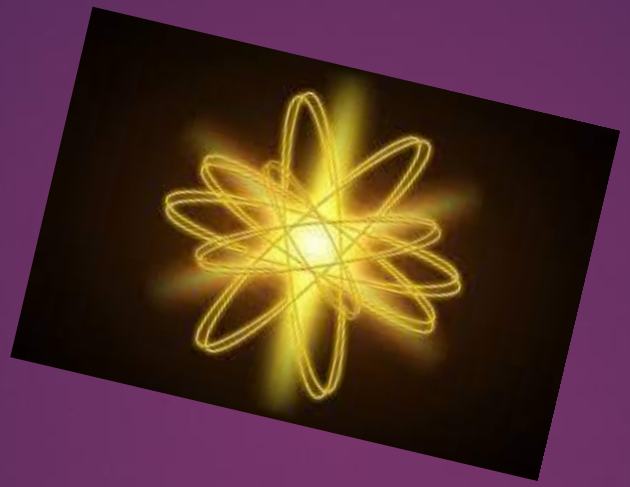


Energy

TEACHER: Clara Cnudde
Materials used for educational purposes


ENERGY

Energy, in physics, is the capacity for doing 1

It may exist in 2 l, kinetic, thermal, electrical, chemical, nuclear, or other various forms.

There are, moreover, heat and work—i.e., energy in the process of 3 from one body to another. After it has been transferred, energy is always designated according to its 4. Hence, heat transferred may become 5 energy, while work done may manifest itself in the form of 6 energy.

All forms of energy are associated with 7. For example, any given body has kinetic energy if it is in motion. A tensioned device such as a bow or spring, though 8, has the potential for creating motion; it contains potential energy because of its configuration. Similarly, nuclear energy is potential energy because it results from the configuration of subatomic particles in the nucleus of an atom.

motion **nature** **thermal** **mechanical** **work**
transfer **at rest** **potential**

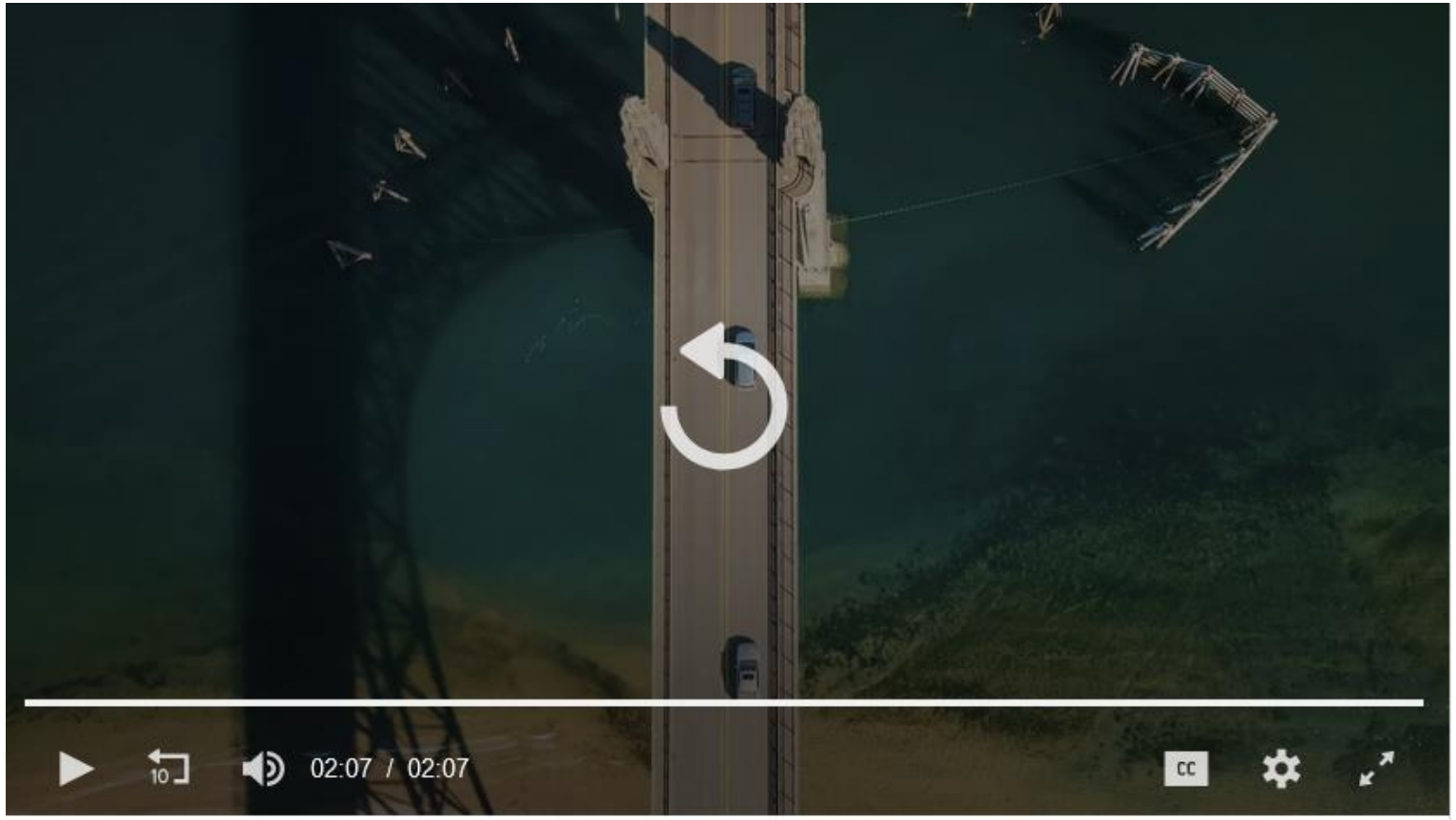
Energy, in physics, is the capacity for doing work.

It may exist in potential, kinetic, thermal, electrical, chemical, nuclear, or other various forms.

There are, moreover, heat and work—i.e., energy in the process of transfer from one body to another. After it has been transferred, energy is always designated according to its nature. Hence, heat transferred may become thermal energy, while work done may manifest itself in the form of mechanical energy.

All forms of energy are associated with motion. For example, any given body has kinetic energy if it is in motion. A tensioned device such as a bow or spring, though at rest, has the potential for creating motion; it contains potential energy because of its configuration. Similarly, nuclear energy is potential energy because it results from the configuration of subatomic particles in the nucleus of an atom.

https://www.britannica.com/science/energy

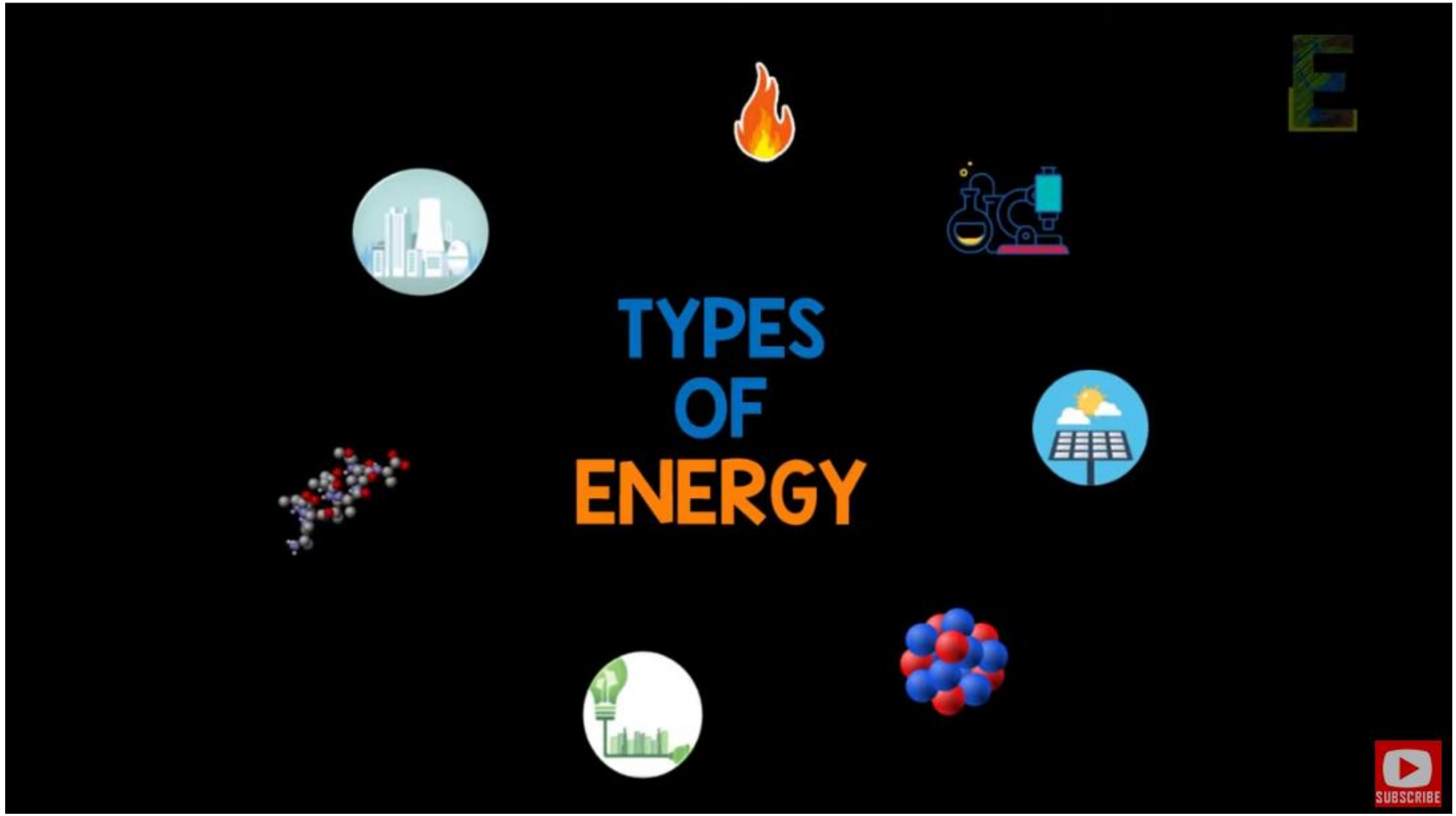


Discover how energy moves between thermal, chemical, mechanical, and other forms

How energy can change from one form to another. Examples presented include a lightbulb, a car's engine, and plant photosynthesis.

Image: Encyclopædia Britannica, Inc.

See all videos for this article


TYPES
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ENERGY
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A video about energy:


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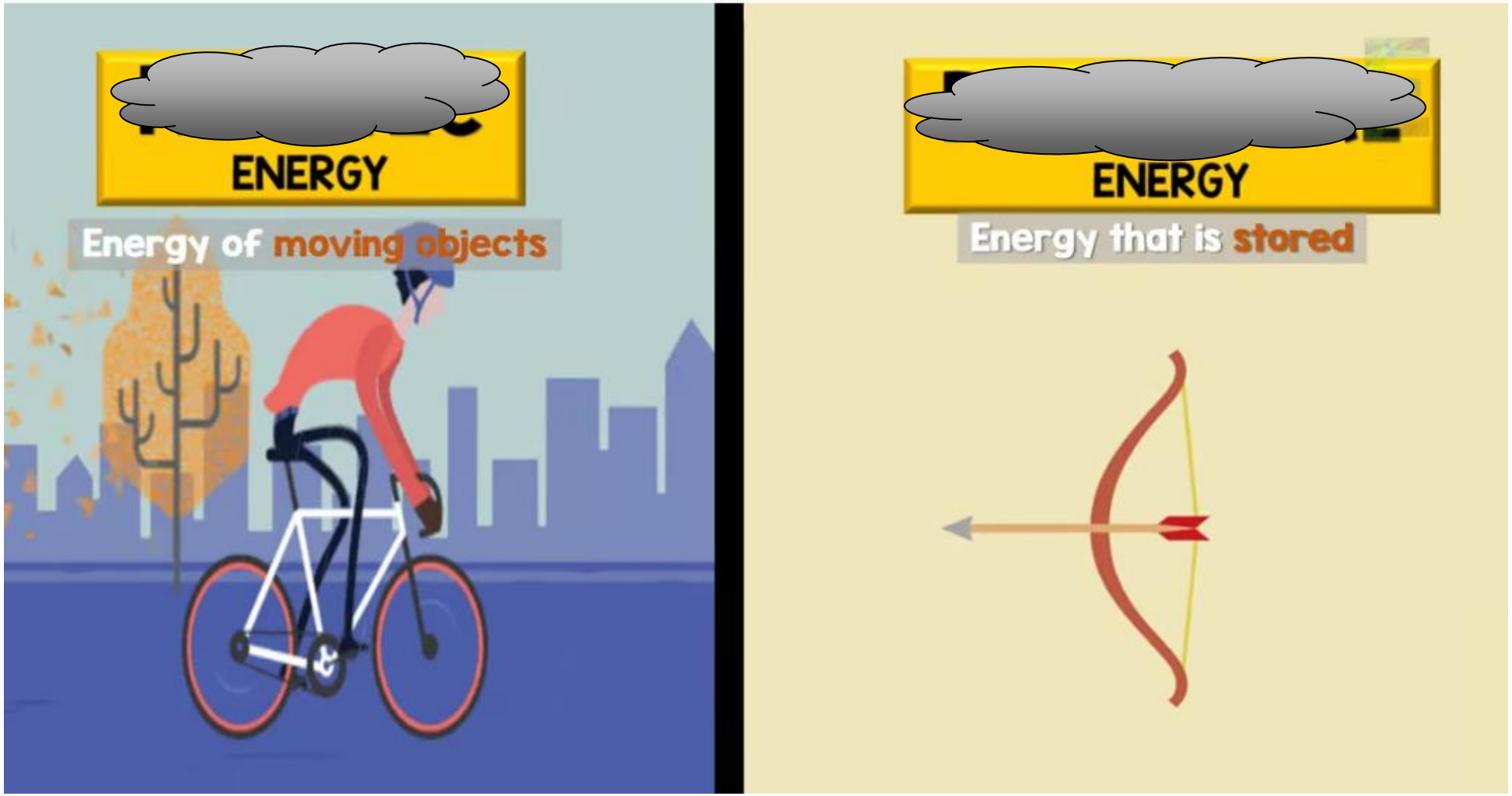
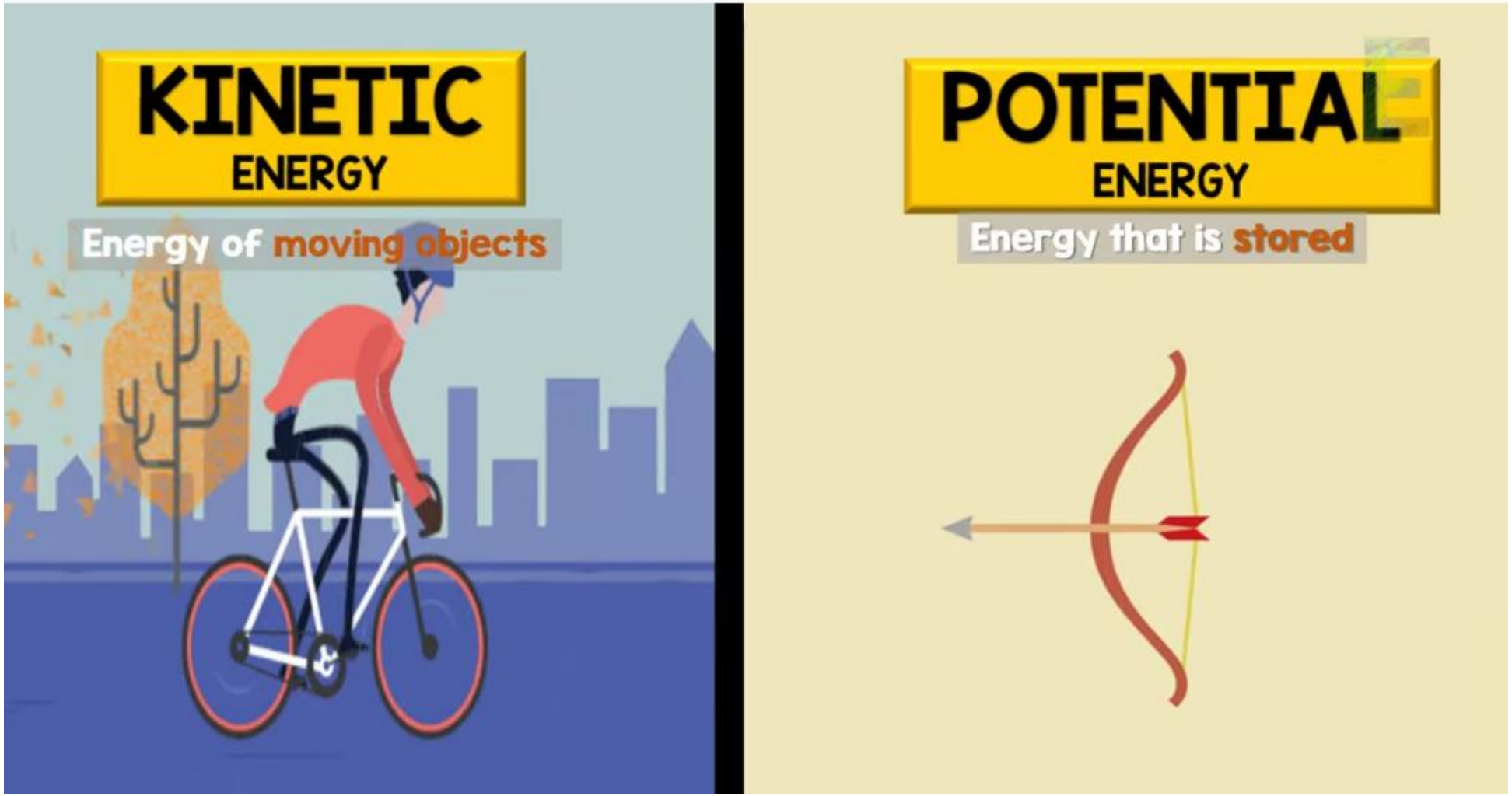
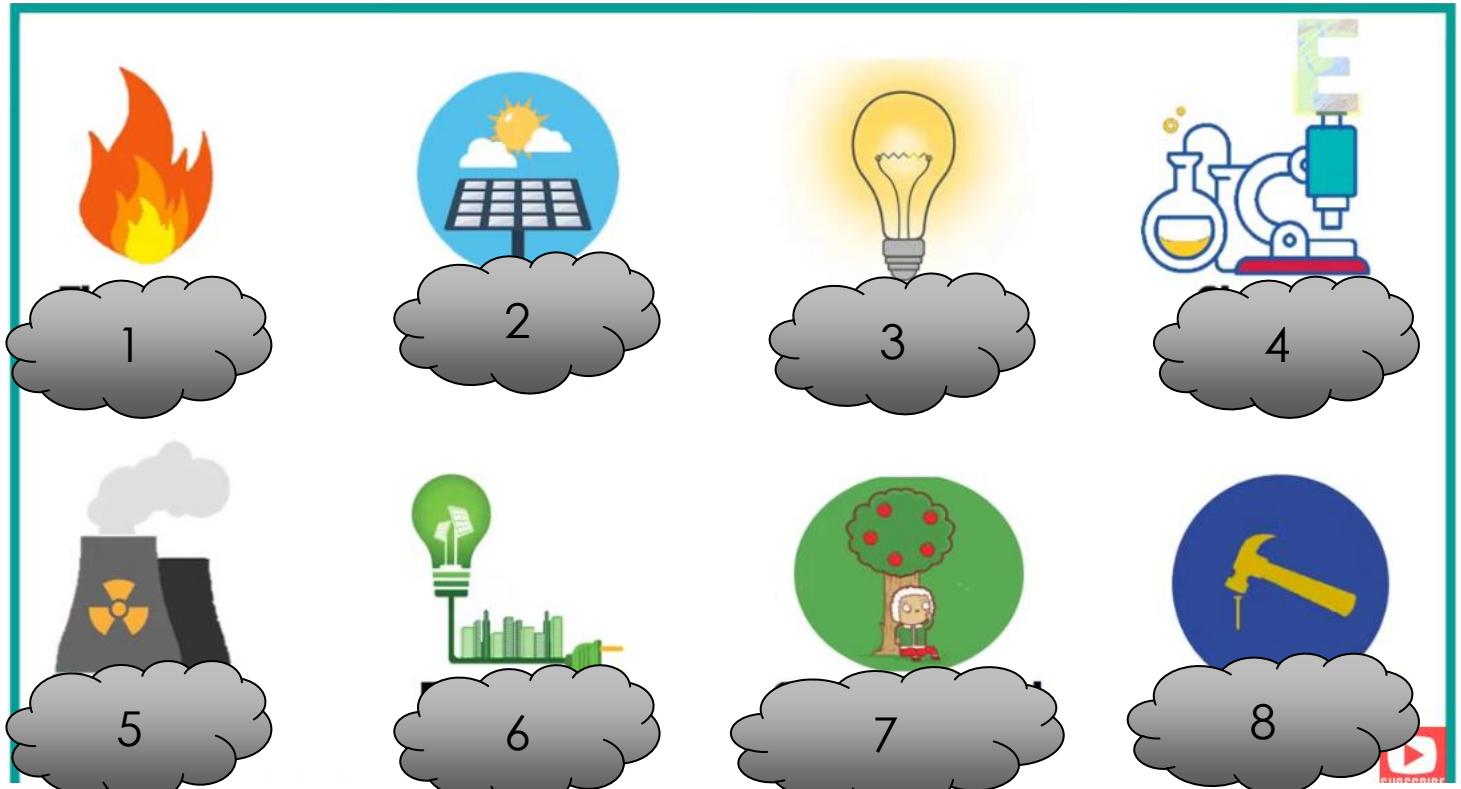
BASIC FORMS OF ENERGY



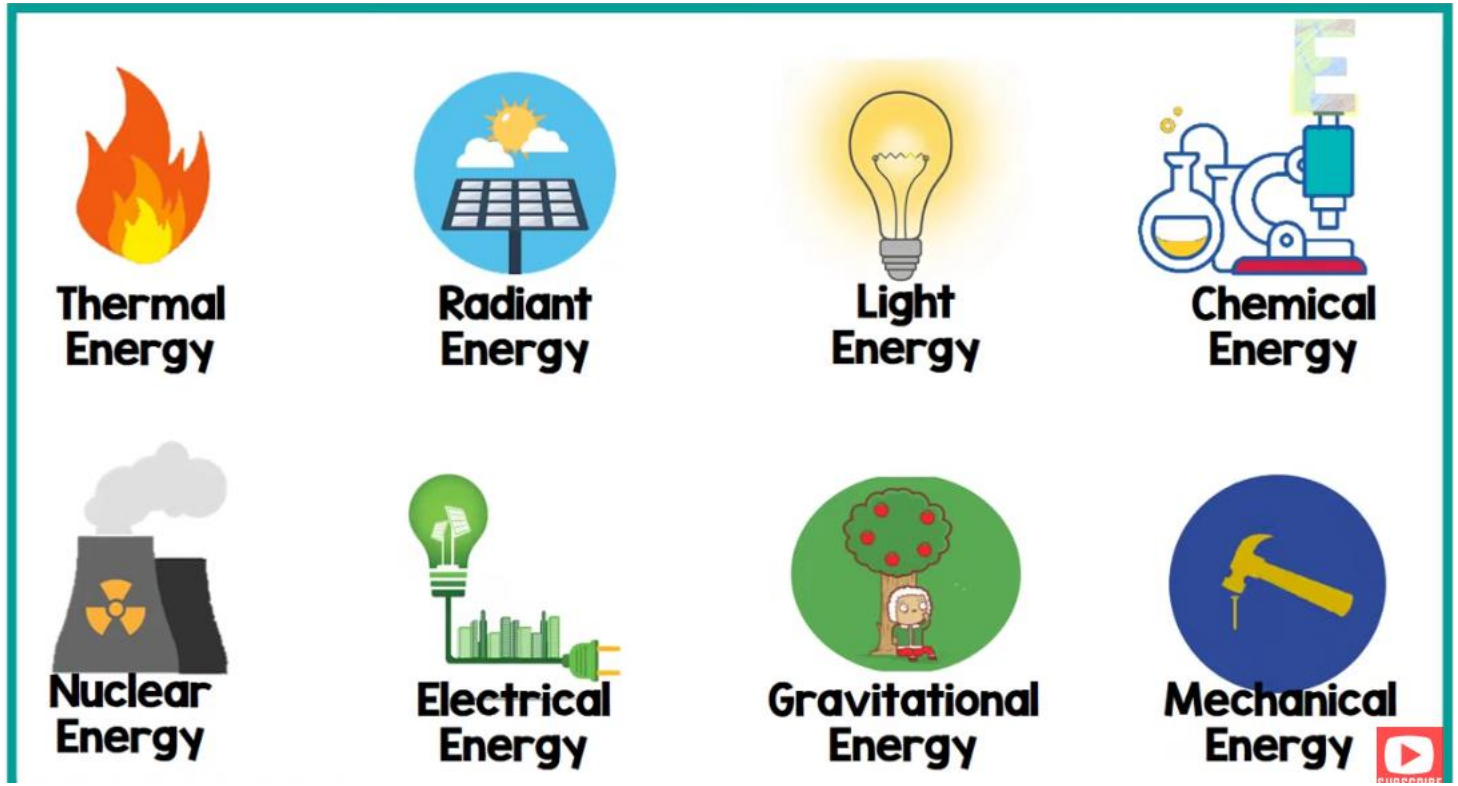
BASIC FORMS OF ENERGY



Other types of energy include:

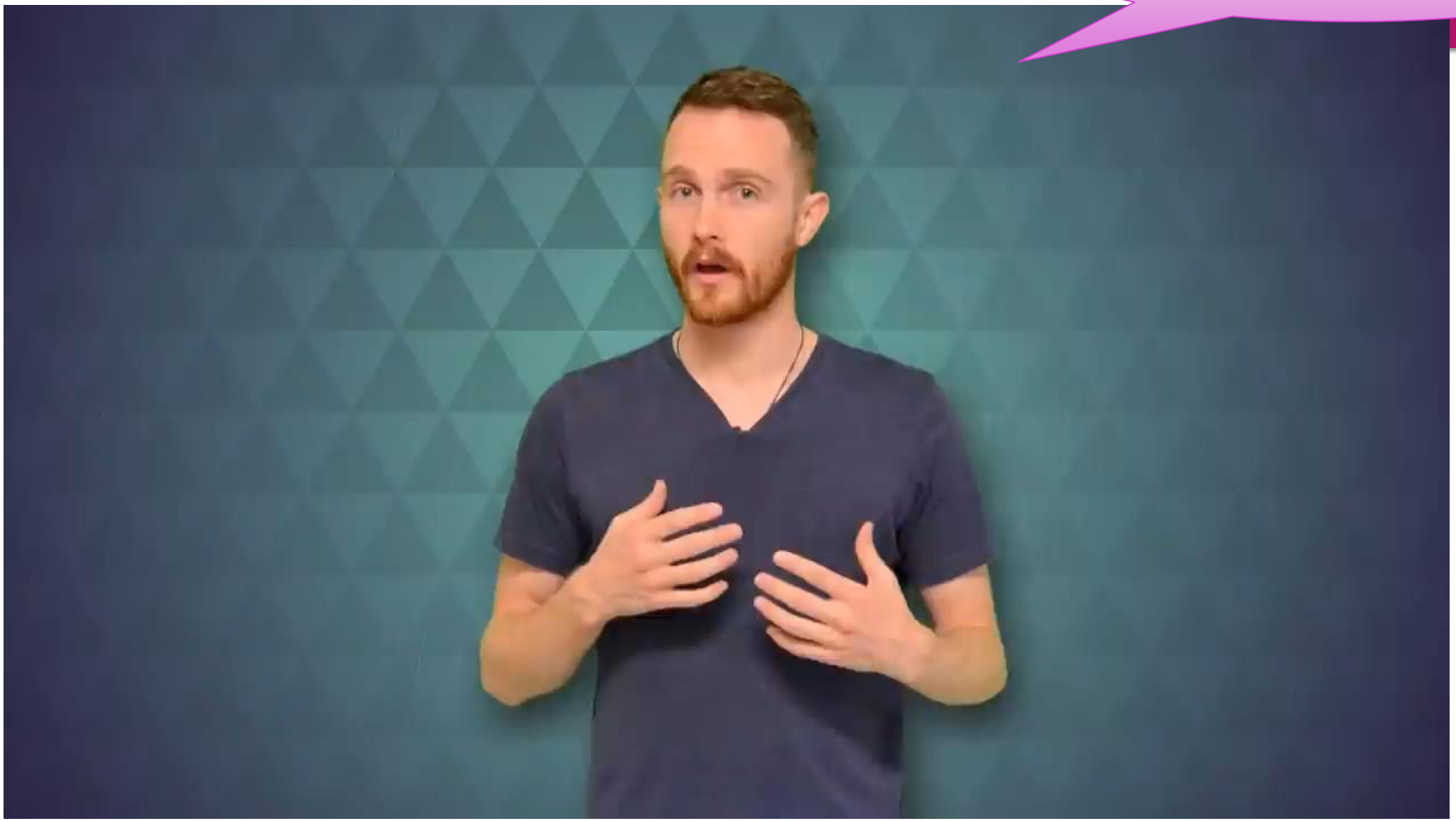


Other types of energy include:



Another video about energy:

What is energy?

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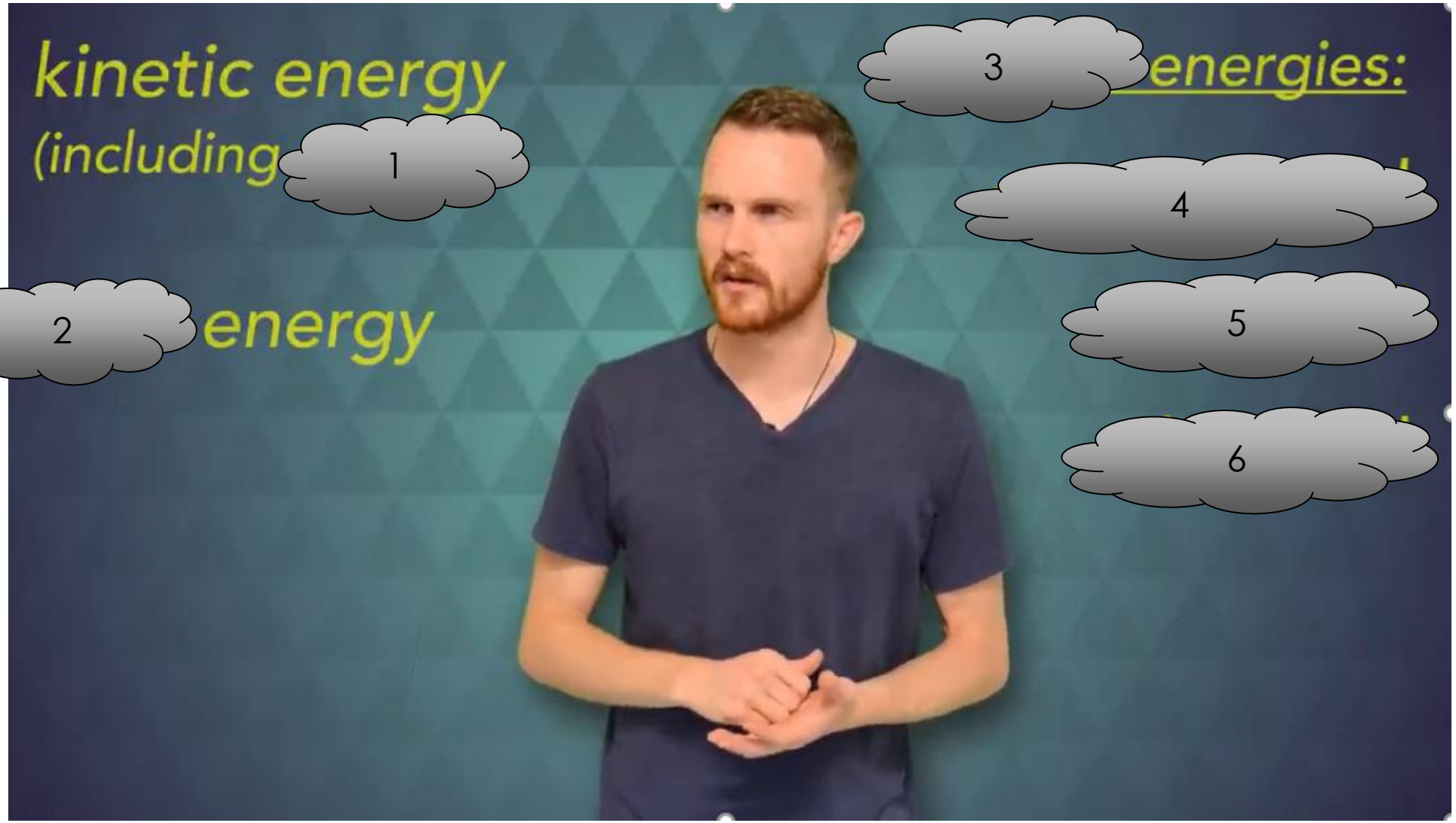
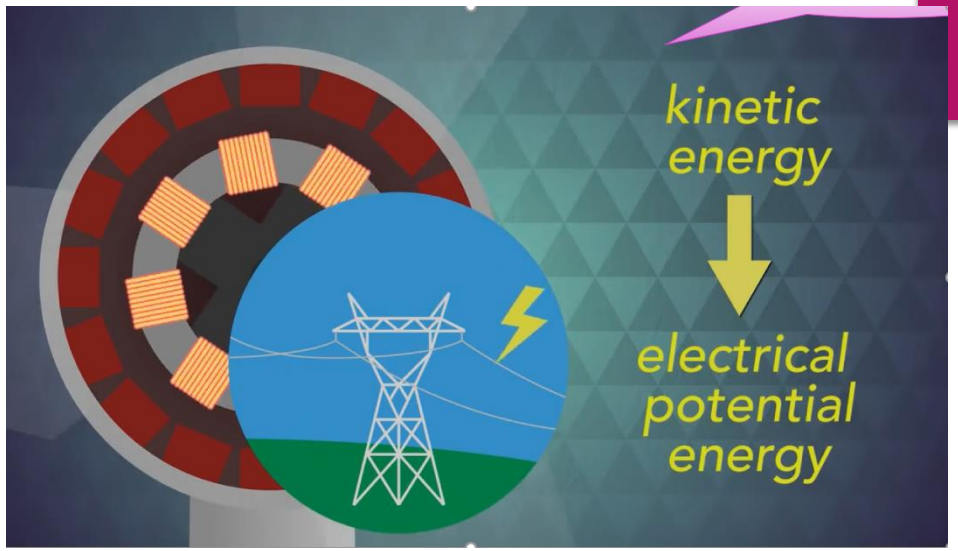
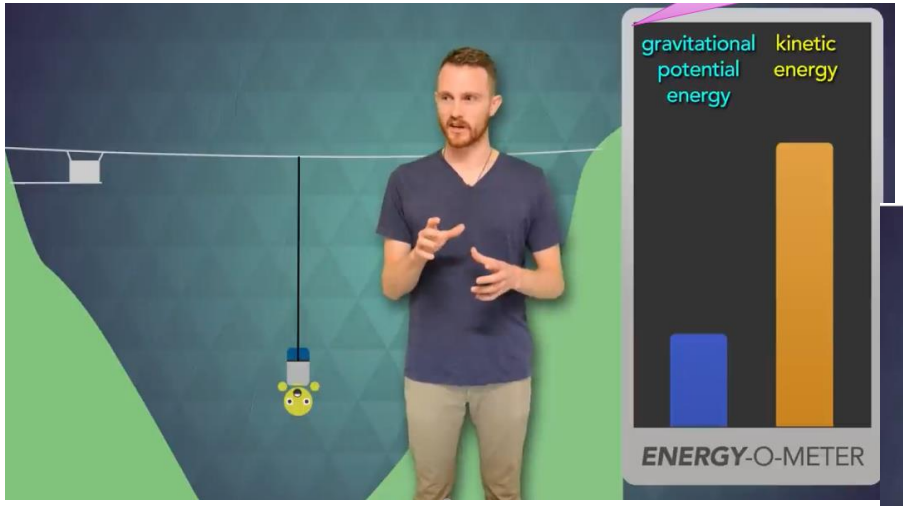
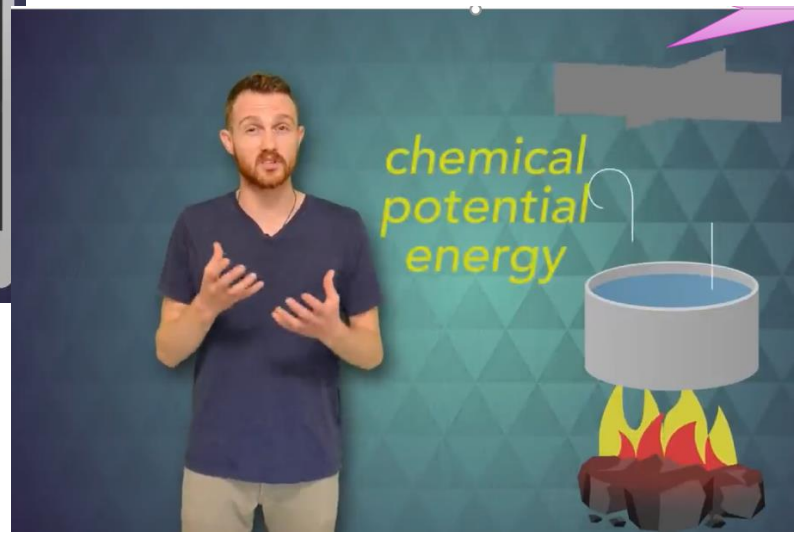

kinetic energy
(including
1
3
energies:
4
2
energy
5
6

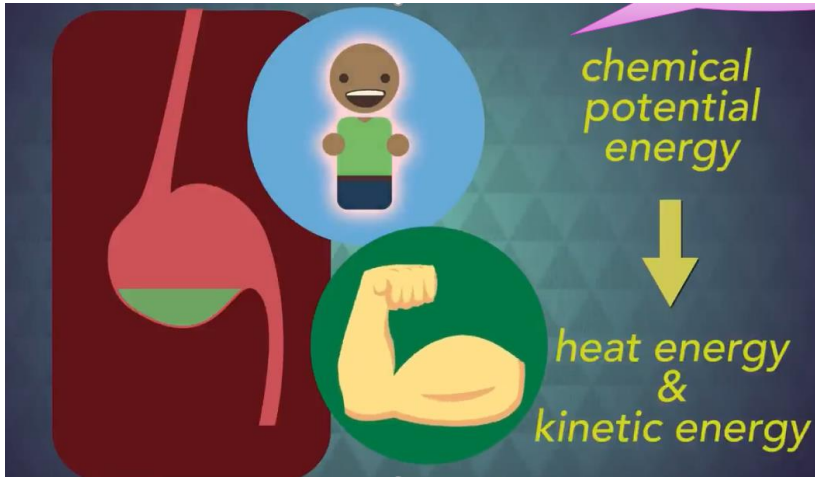

kinetic energy
(including sound)
heat energy
Potential energies:
gravitational
electrical
chemical

What are the examples given in the video for the different types of energy ?





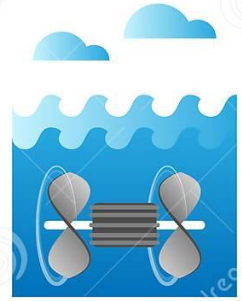




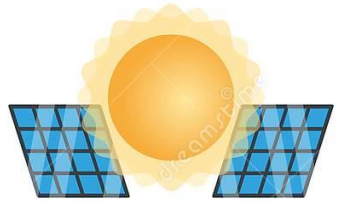
ENERGY SOURCES

RENEWABLE ENERGY

Wind



Hydropower



Solar

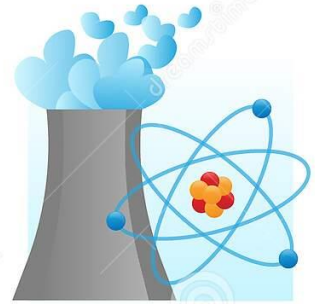
Geothermal

Biomass

NON-RENEWABLE ENERGY

Oil

Coal



Nuclear

Natural Gas

Energy Resources

Sources of energy, or energy resources, are used for generating electricity and for transport, heating and cooking. Each energy resource has different benefits and drawbacks.

Non-Renewable Resources

These resources are finite and will eventually run out. Once they are depleted, they cannot be replenished.

Fossil Fuels

- Coal
- Natural Gas
- Crude Oil
- Nuclear

Renewable Resources

These resources are infinite. They can be easily replenished and will not run out.

- Solar (Sun)
- Wind
- Hydroelectric
- Geothermal
- Biofuels
- Tidal & Wave

If a country needs more electricity, which resource should it use?

Nuclear

- ✔ Efficient, generates a lot of electricity
- ✖ Highly radioactive waste products, risk of accidents

Fossil Fuel

- ✔ Cheap fuel that is easy to obtain
- ✖ Produces the polluting gases carbon dioxide and sulfur dioxide

Wind

- ✔ A non-polluting, renewable resource
- ✖ Wind turbines require a lot of space and only work when there is wind

Hydroelectric

- ✔ Potential to generate a lot of electricity
- ✖ Dams are expensive to build and can negatively affect wildlife

Solar

- ✔ Photovoltaic (PV) panels can be installed on individual buildings
- ✖ PV panels are expensive and only work when it is sunny

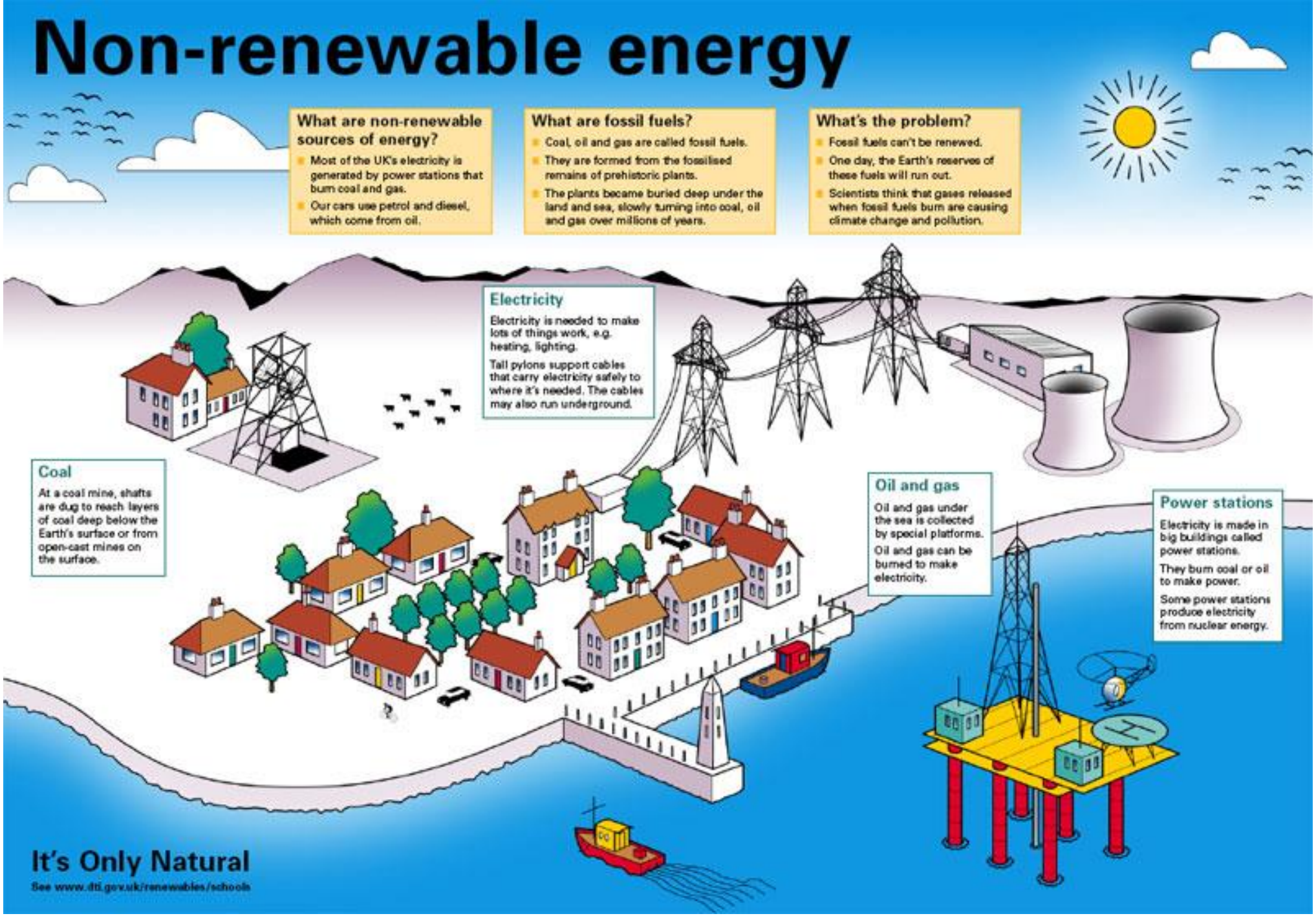
Biomass

- ✔ Releases only the CO_2 within biomass (plants) when it is burnt, so it is carbon neutral
- ✖ Requires land to grow plants, which reduces space for growing food

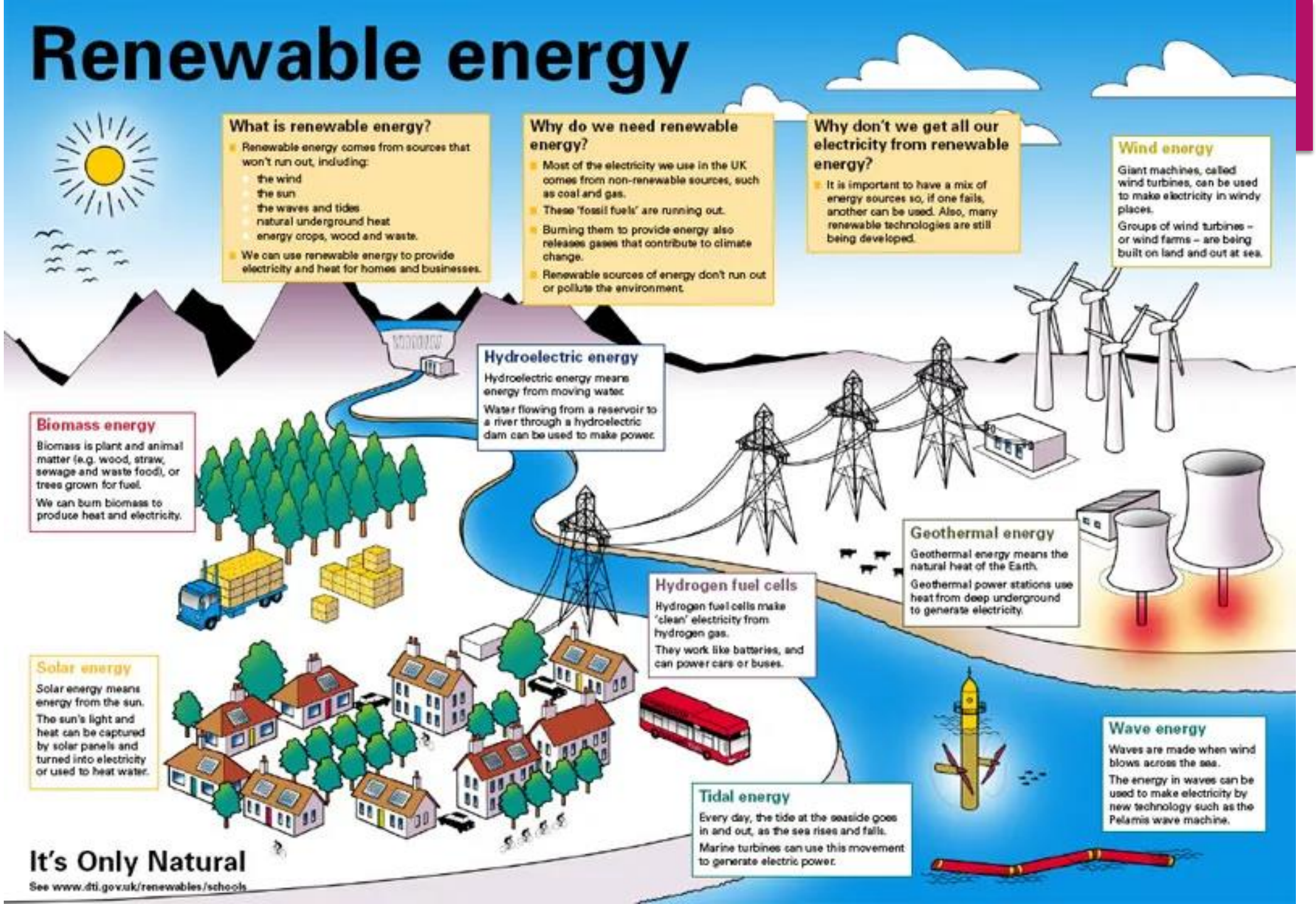
In reality, a country will use a range of different energy resources for its needs.

daydream

Non-renewable energy



Renewable energy



What is renewable energy?

- Renewable energy comes from sources that won't run out, including:
  - the wind
  - the sun
  - the waves and tides
  - natural underground heat
  - energy crops, wood and waste.
- We can use renewable energy to provide electricity and heat for homes and businesses.

Why do we need renewable energy?

- Most of the electricity we use in the UK comes from non-renewable sources, such as coal and gas.
- These 'fossil fuels' are running out.
- Burning them to provide energy also releases gases that contribute to climate change.
- Renewable sources of energy don't run out or pollute the environment.

Why don't we get all our electricity from renewable energy?

- It is important to have a mix of energy sources so, if one fails, another can be used. Also, many renewable technologies are still being developed.

Wind energy

Giant machines, called wind turbines, can be used to make electricity in windy places.

Groups of wind turbines – or wind farms – are being built on land and out at sea.

Hydroelectric energy

Hydroelectric energy means energy from moving water.

Water flowing from a reservoir to a river through a hydroelectric dam can be used to make power.

Biomass energy

Biomass is plant and animal matter (e.g. wood, straw, sewage and waste food), or trees grown for fuel.

We can burn biomass to produce heat and electricity.

Geothermal energy

Geothermal energy means the natural heat of the Earth.

Geothermal power stations use heat from deep underground to generate electricity.

Hydrogen fuel cells

Hydrogen fuel cells make 'clean' electricity from hydrogen gas.

They work like batteries, and can power cars or buses.

Solar energy

Solar energy means energy from the sun.

The sun's light and heat can be captured by solar panels and turned into electricity or used to heat water.

Tidal energy

Every day, the tide at the seaside goes in and out, as the sea rises and falls.

Marine turbines can use this movement to generate electric power.

Wave energy

Waves are made when wind blows across the sea.

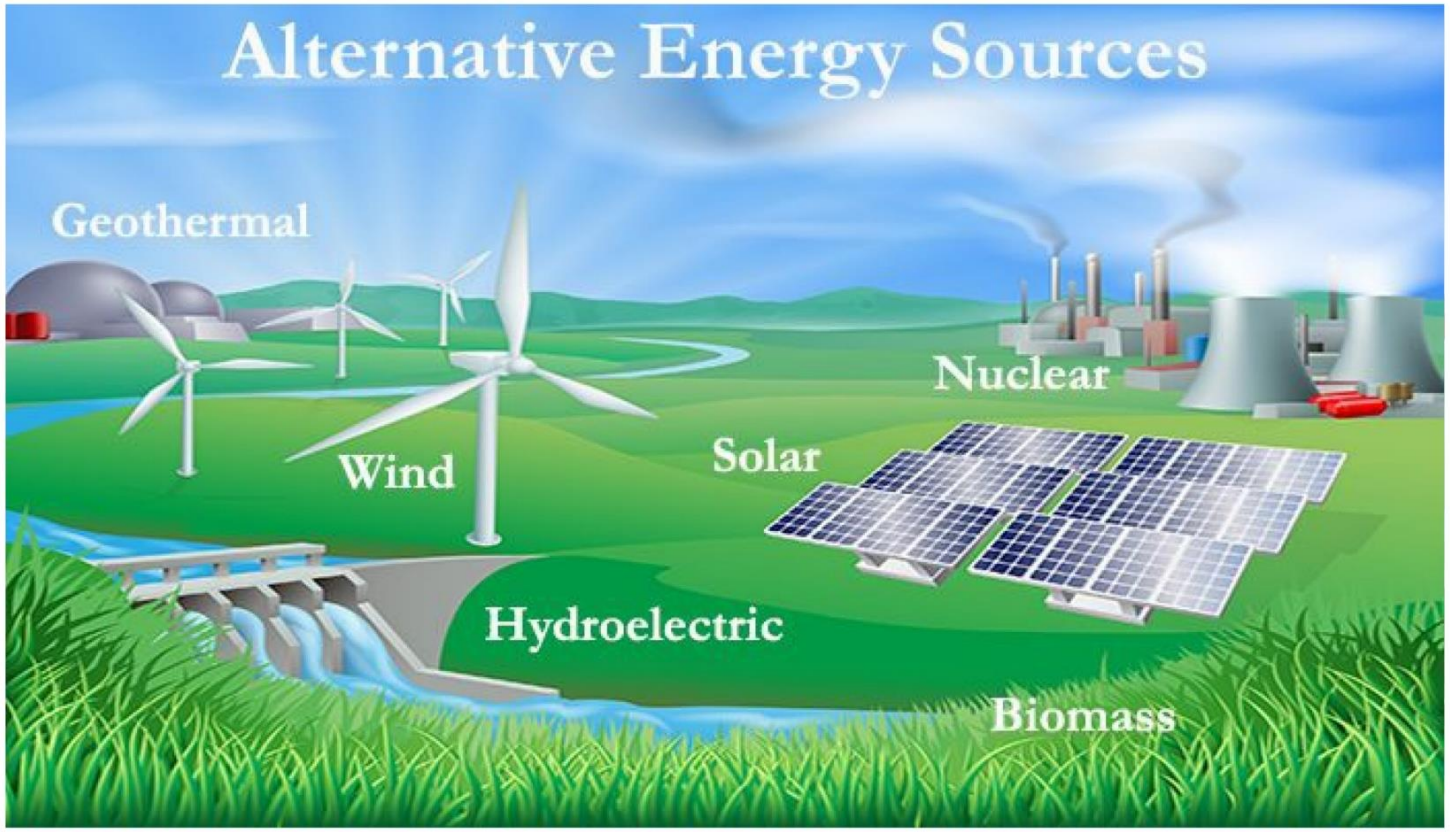
The energy in waves can be used to make electricity by new technology such as the Pelamis wave machine.

It's Only Natural

See www.dti.gov.uk/renewables/schools

What Are the 9 Most Commonly Used Alternative Energy Sources?

- Wind Energy. ...
- Solar Energy. ...
- Hydroelectric Energy. ...
- Geothermal Energy. ...
- Bioenergy. ...
- Nuclear Energy. ...
- Hydrogen Energy. ...
- Tidal Energy.

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