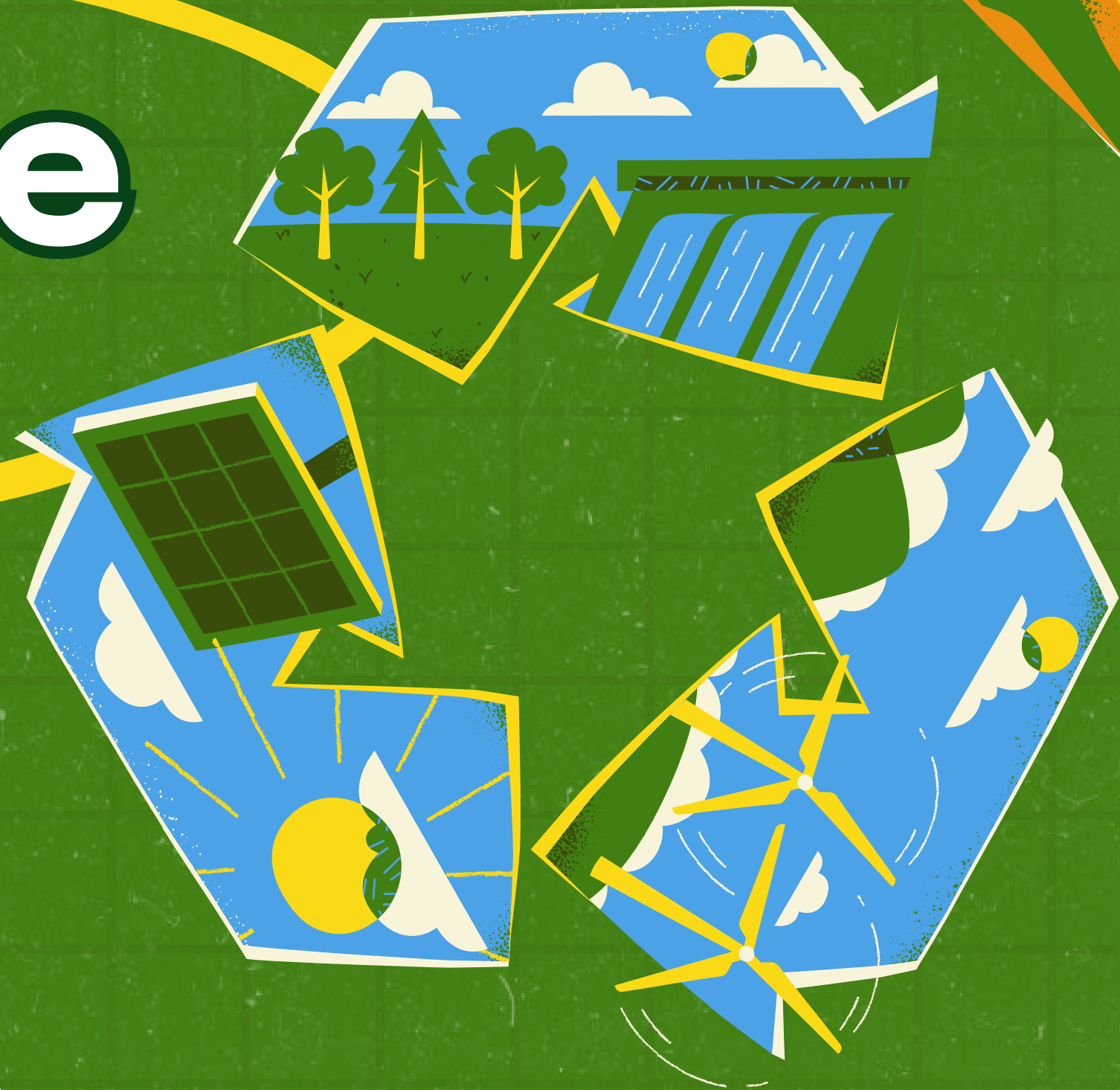


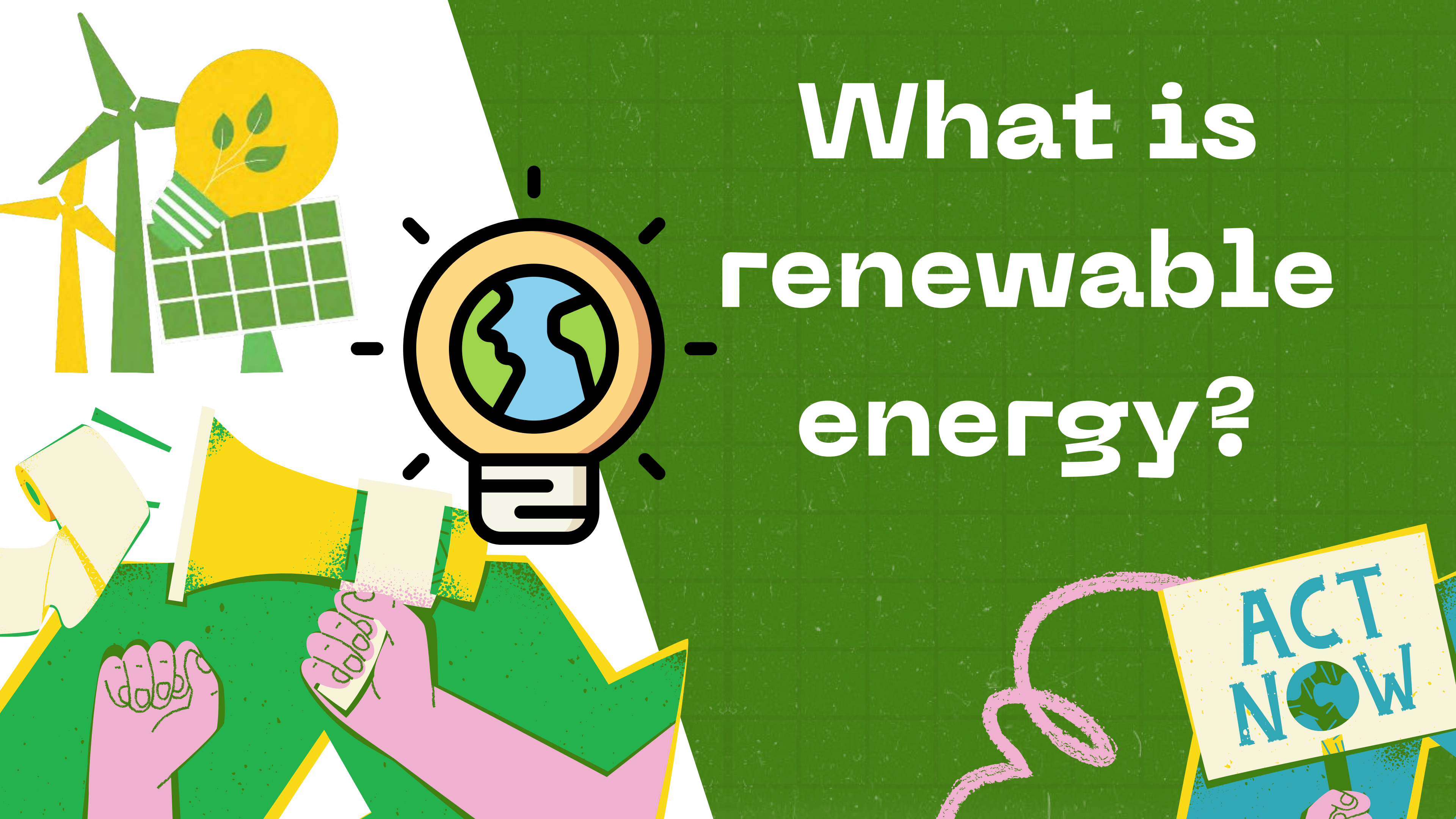
Renewable Energy

Supporting a Sustainable Future

Teacher's Pet



What is renewable energy?



What is Renewable Energy?

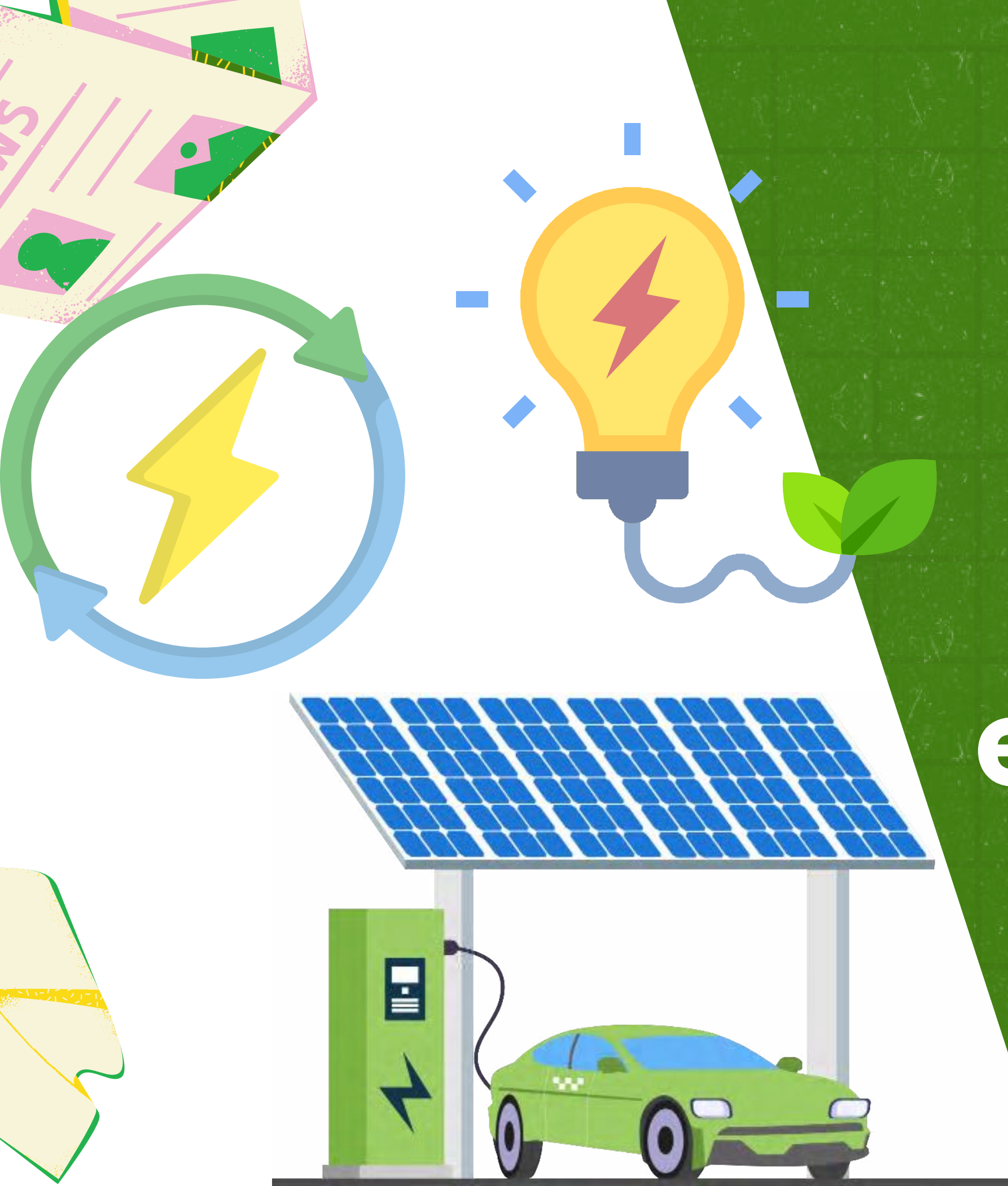
Renewable energy resources are not depleted over time.

Renewable energy is made from resources nature can replace over time if they are handled responsibly.

Renewable energy is also called “clean energy” or “green power” because it doesn’t pollute the air or the water.



**What is an
example of a
renewable
energy source?**



Examples of Renewable Energy Source:



Solar (sunshine)

Wind (air movement)

Water (hydro)

Biomass (organic matter)

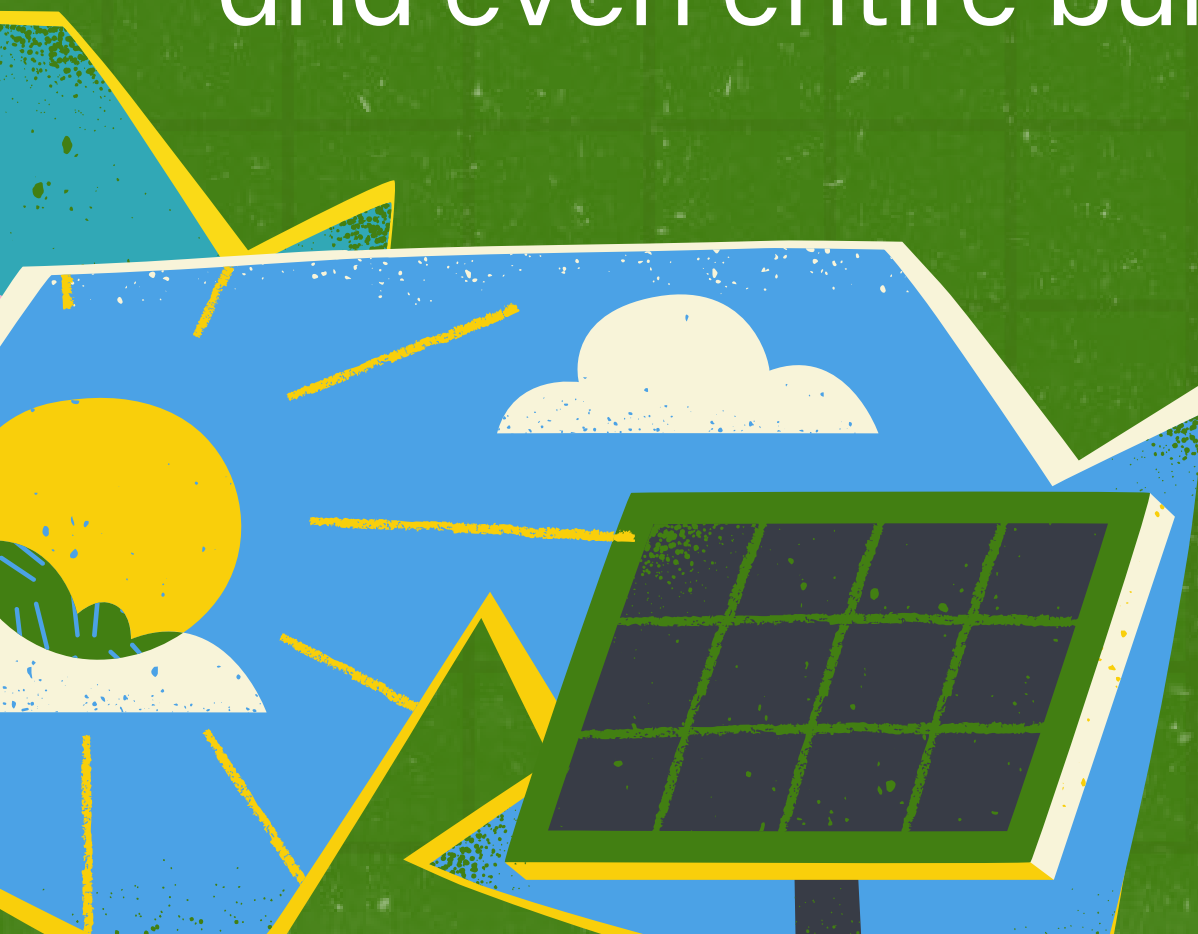
Geothermal (heat from underground)

Tidal (ocean movement)



Solar Energy

Solar energy is power from the Sun. We can capture sunlight using special panels and turn it into electricity to power things like lights, TVs, and even entire buildings!



Wind Energy

Wind energy is power from the wind. Big wind turbines catch the wind and turn it into electricity, kind of like using the wind to spin a giant fan that makes power!



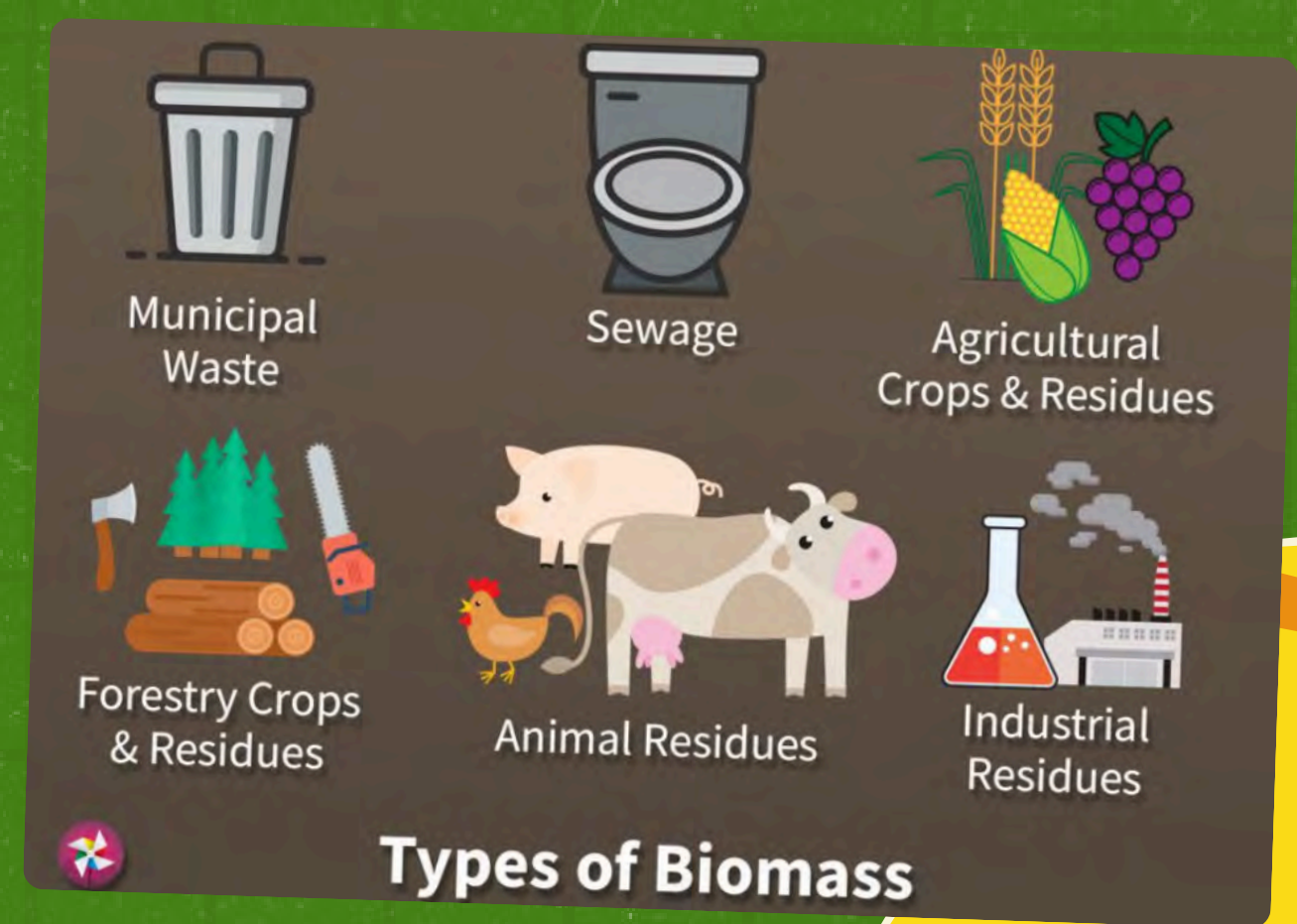
Water (Hydro) Energy

Hydroelectric energy is produced by capturing the energy of flowing or falling water. This is usually done using dams on large rivers.



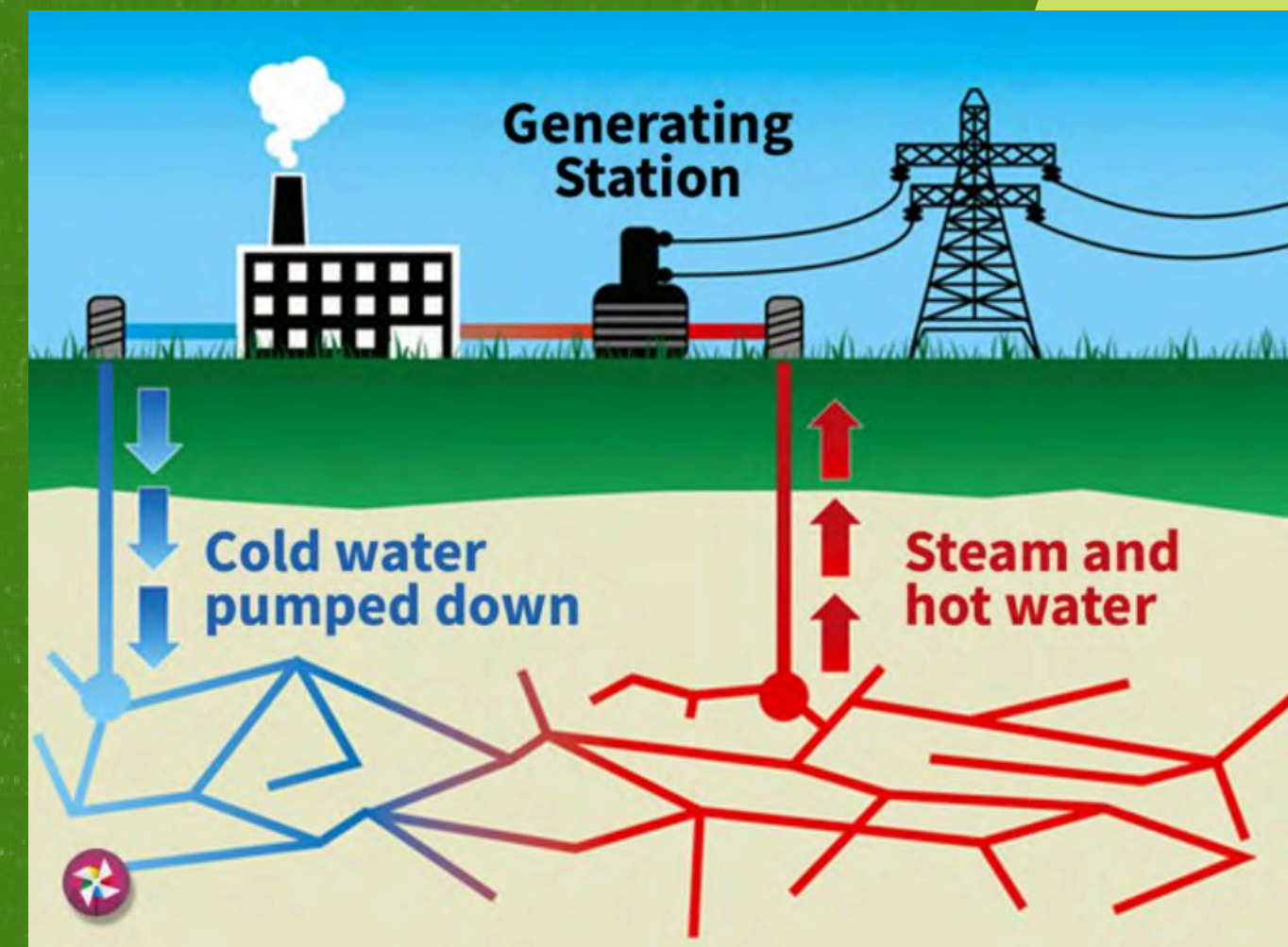
Biomass Energy

Biomass energy is produced from organic materials such as plant and animal waste. It can be used for heating, generating electricity, and as fuel.



Geothermal Energy

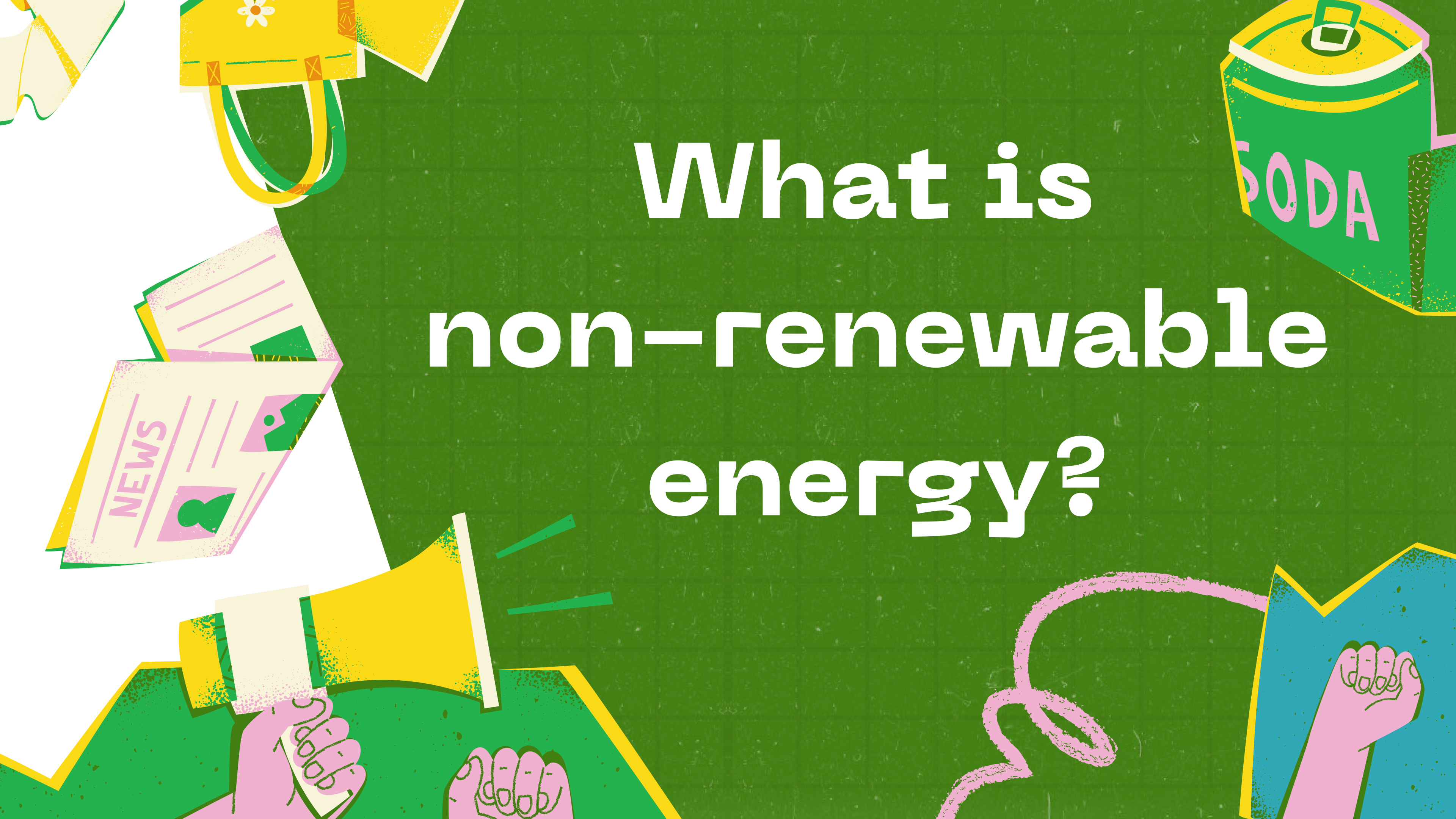
Geothermal energy is heat from inside the Earth. The Earth's core is very hot, and this heat can travel to the surface. It can be used to make electricity or heat buildings, like tapping into the Earth's natural heater!



Tidal Energy

Tidal energy is power that comes from the ocean's waves and tides. As the water moves in and out, it can be used to make electricity, kind of like using the ocean's motion to create energy.





What is non-renewable energy?

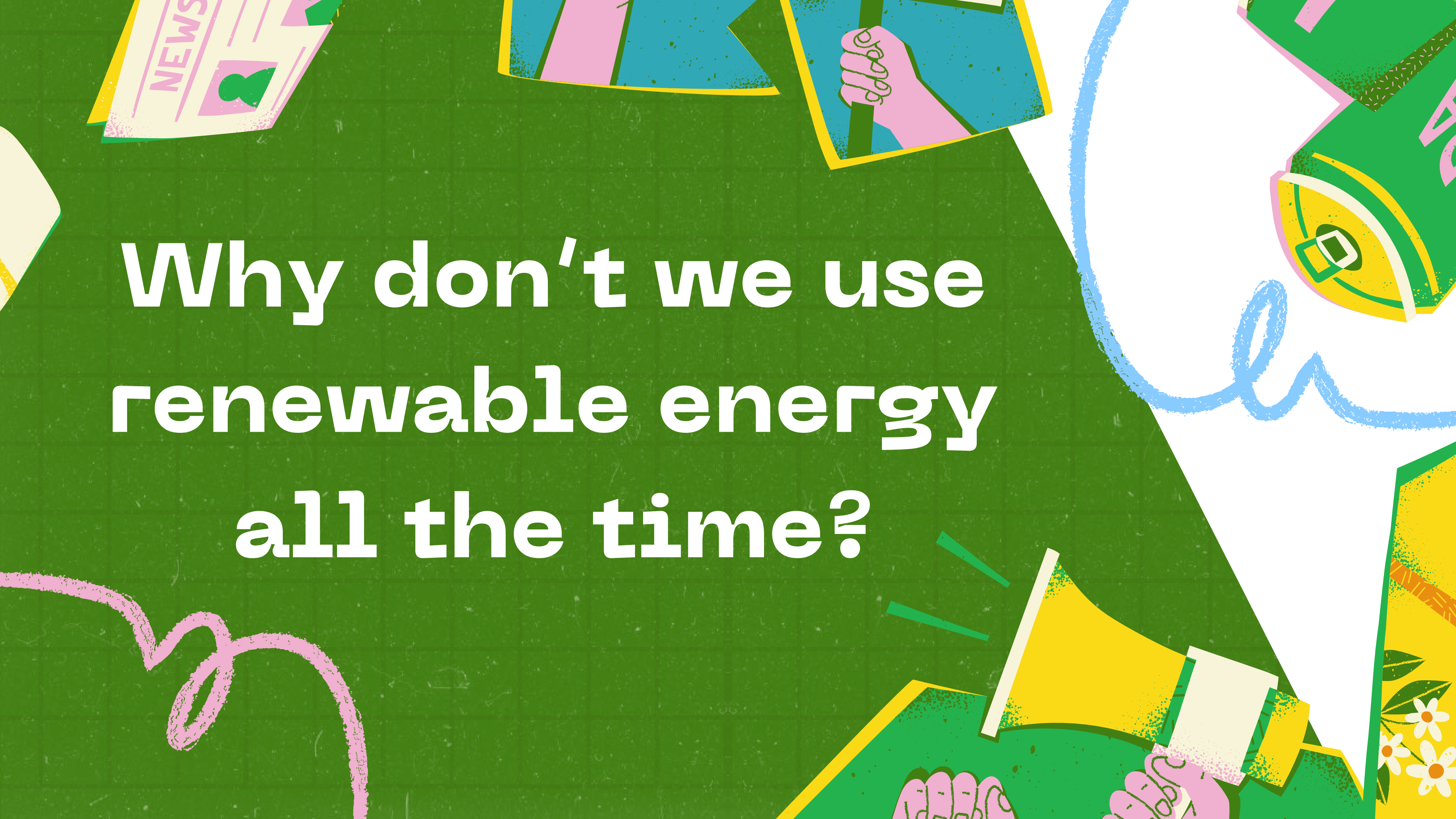
What is Non-Renewable Energy?

Non-renewable energy resources are depleted over time.




They will not be naturally replenished for thousands or millions of years.

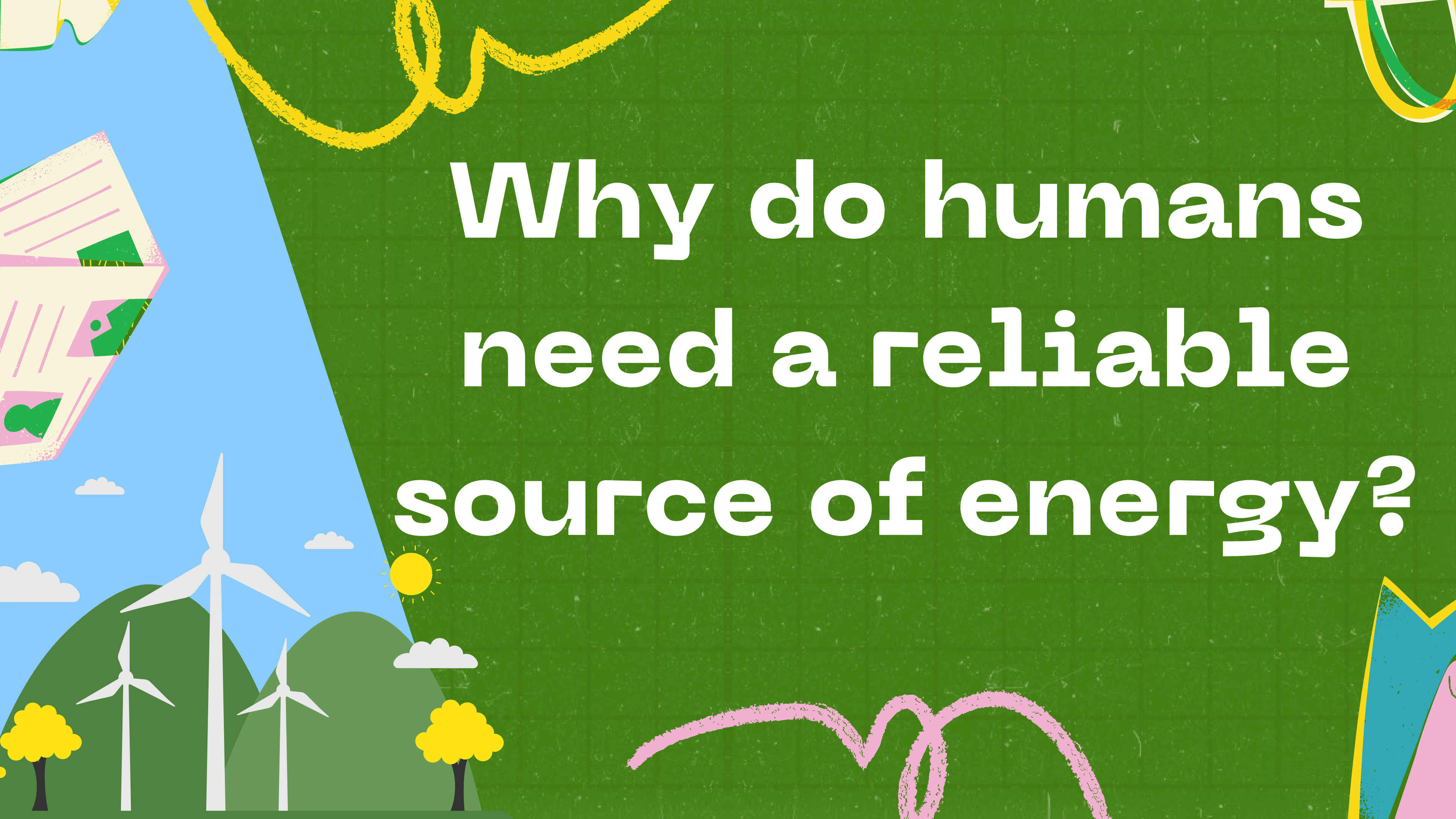
Non-renewable energy includes nuclear and fossil fuels.






**Why don't we use
renewable energy
all the time?**

- 
- 
- 
- We need better batteries to store electricity from solar and wind power.
 - It requires new technology, money, and natural spaces to invest in renewable energy.
 - Minerals for batteries and solar panels are mined and transported from all over the world.



**Why do humans
need a reliable
source of energy?**



Humans rely on energy resources to fulfill energy needs:

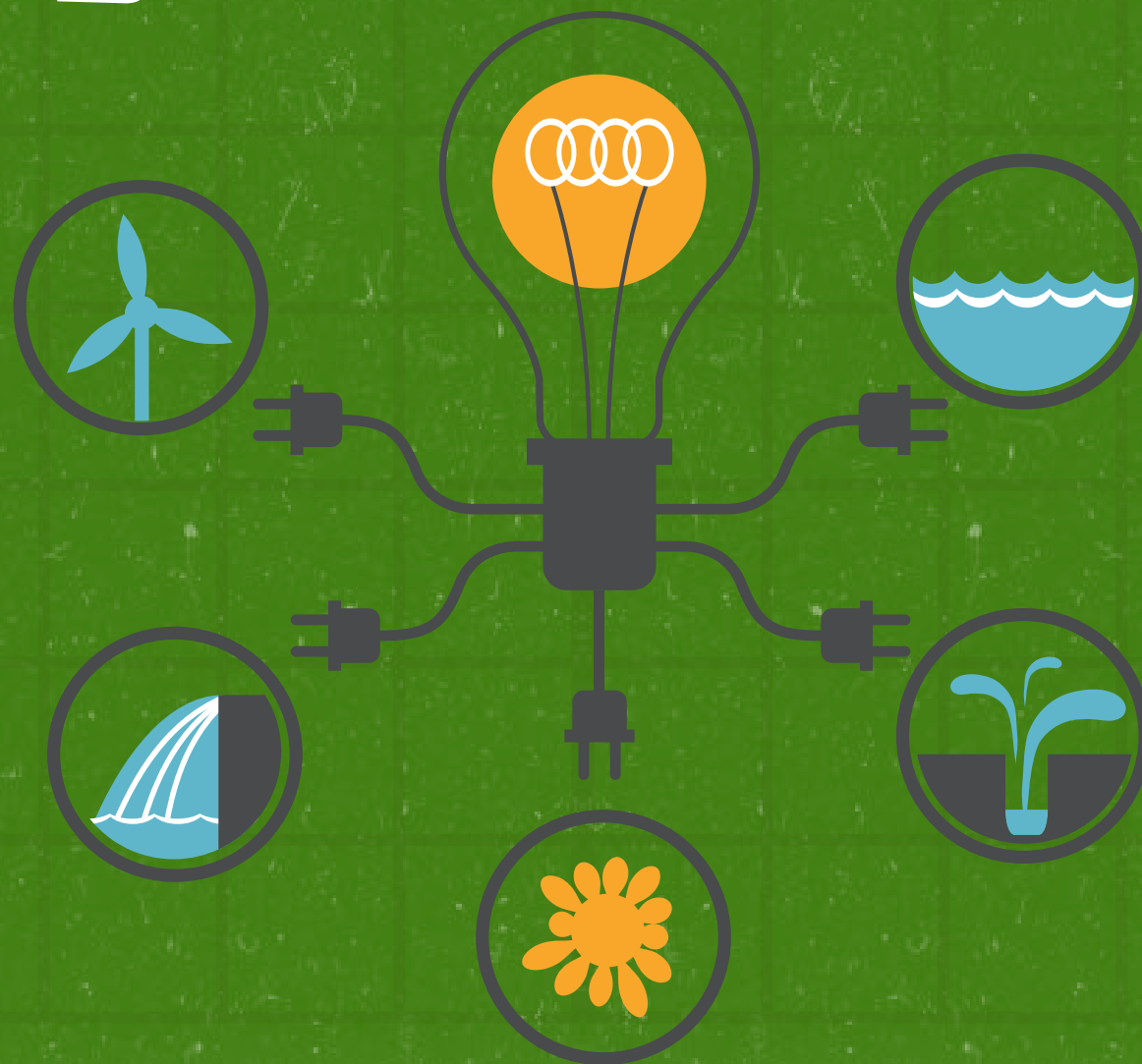
- Heating and cooling our homes
 - Lighting our homes and schools
 - Driving cars and buses
 - Manufacturing products
- 

Alberta relies on both renewable and non-renewable energy resources to fulfill energy needs:

- Fossil Fuels
- Water & Hydro
- Wind
- Biomass



Why is renewable energy important?



- Much of the world relies on non-renewable energy to heat their homes, power their electronic devices and their vehicles.



- Once non-renewable energy sources are used up, they will be gone forever.
- Developing technologies that can efficiently use renewable energy sources is critical to our future.
- Reducing Greenhouse gases!

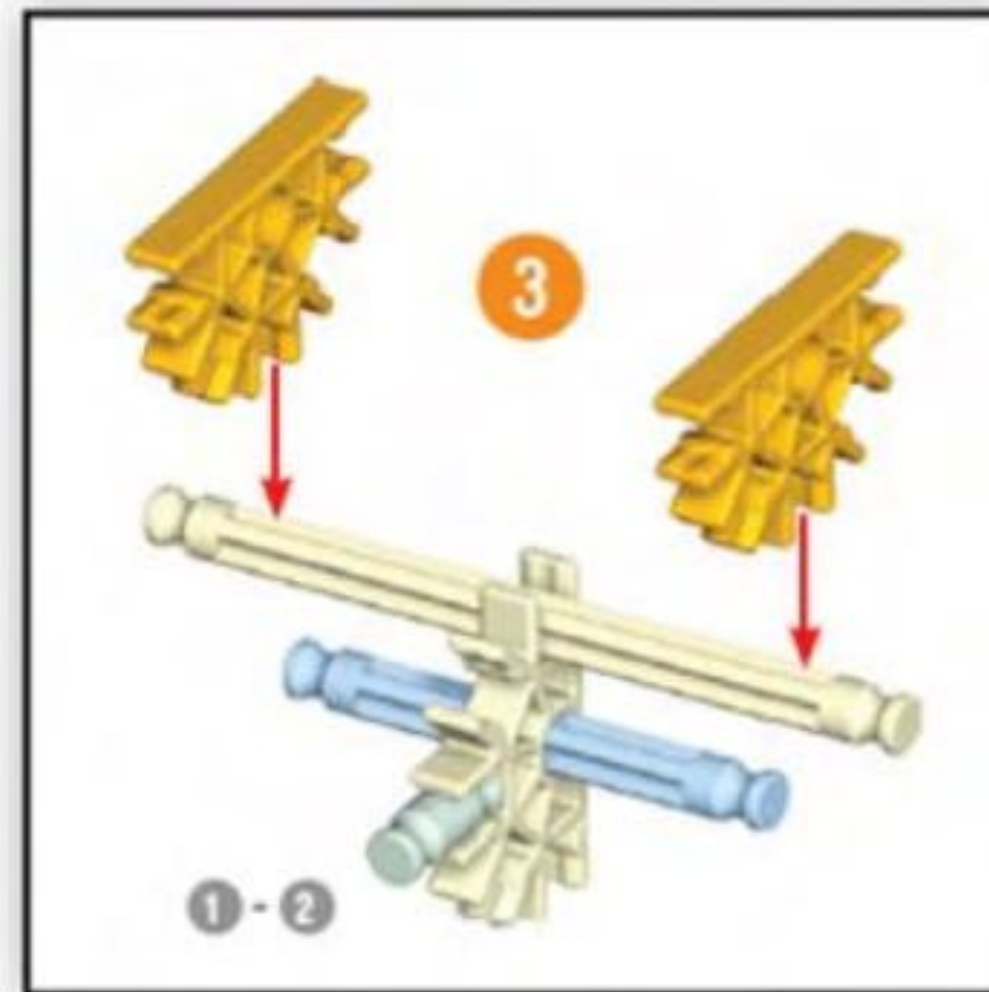
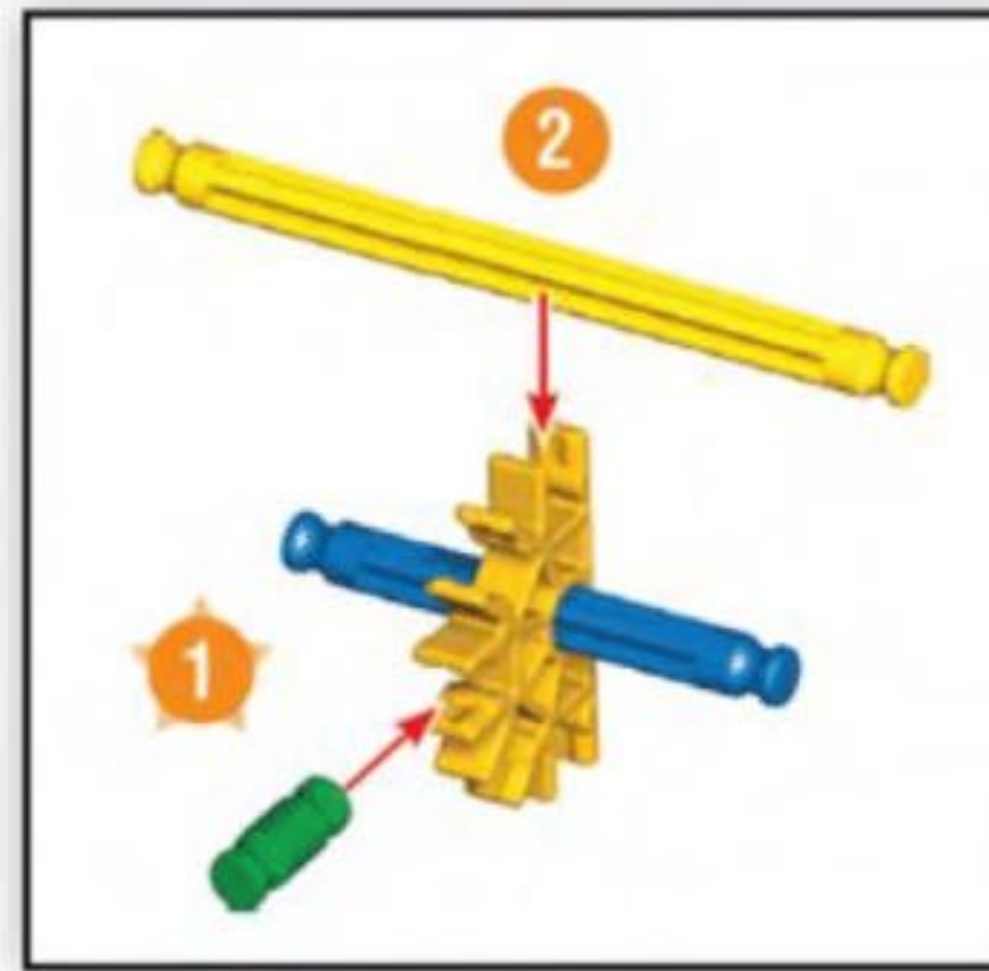


K'NEX Building Basics

Start Building

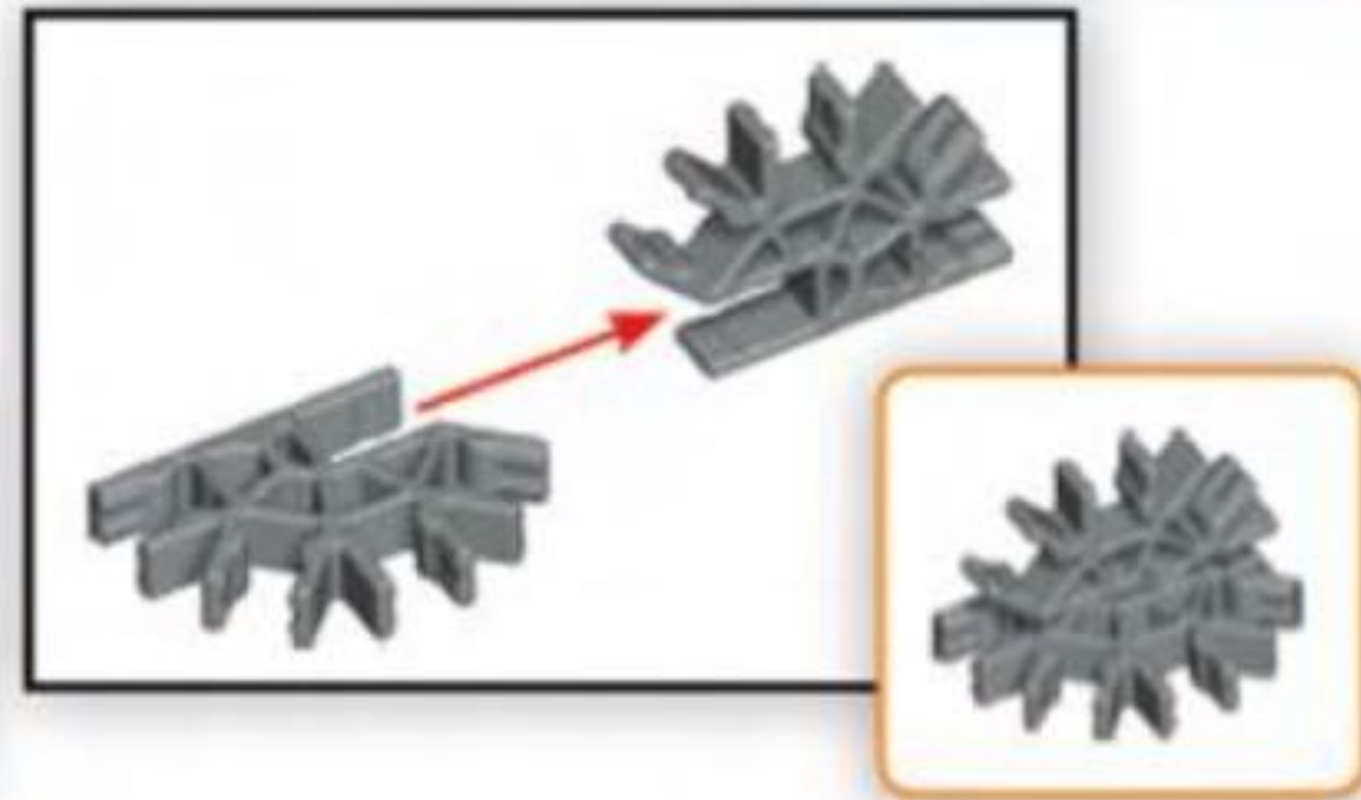
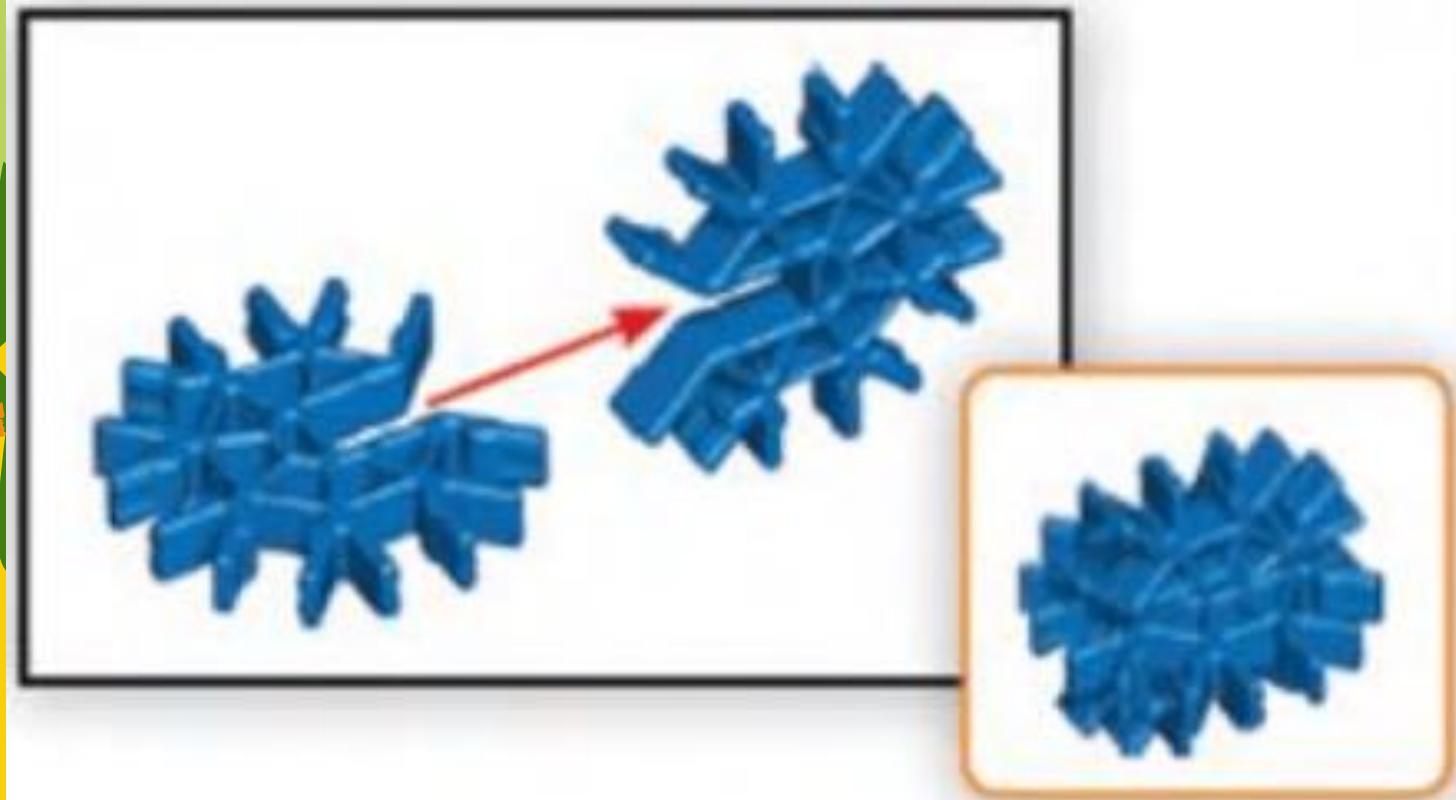
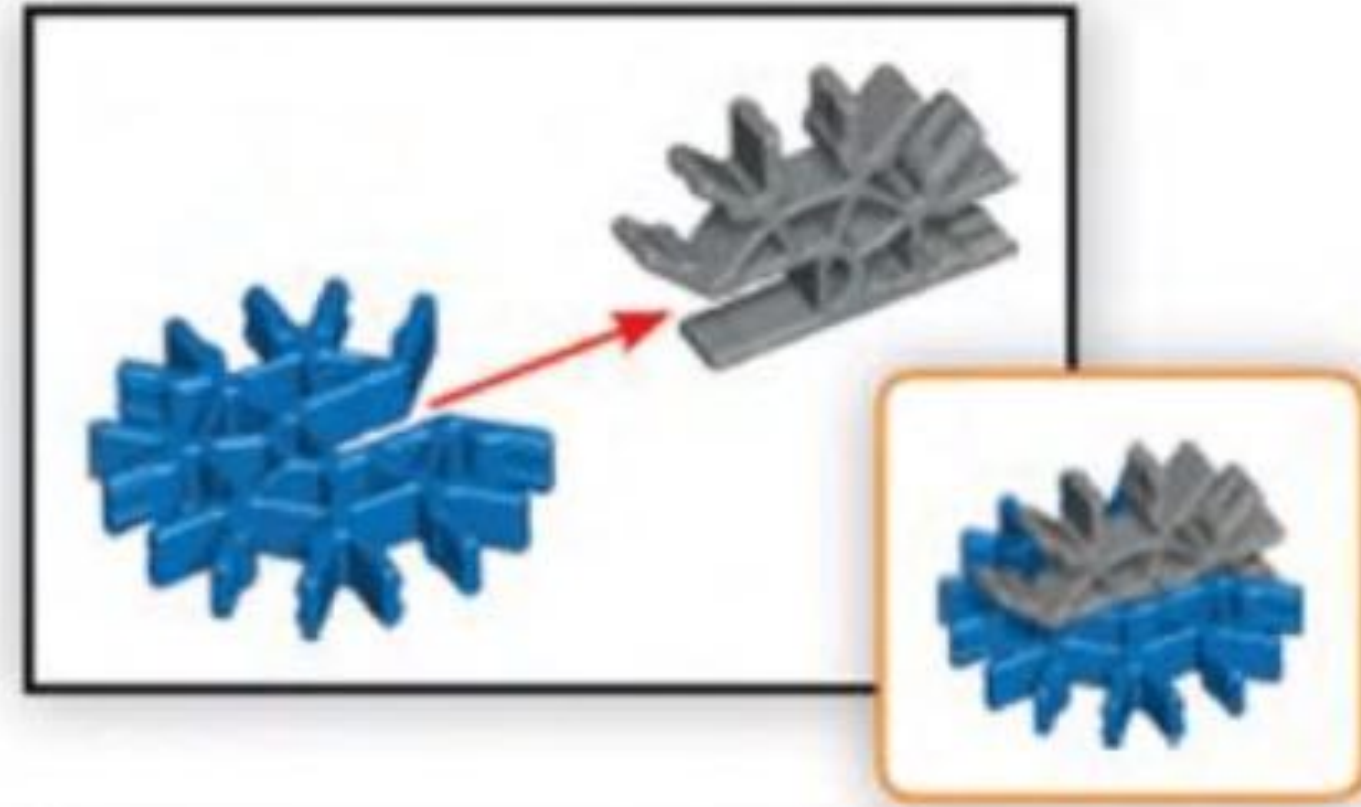
To begin your model, find the ❶ and follow the numbers. Each piece has its own shape and color. Just look at the pictures, find the pieces in your set that match and then connect them together.

Try to face your model in the same direction as the instructions while you build. The arrows show you where the parts connect, but not all connection points have arrows. Faded colors show you this section is already built.

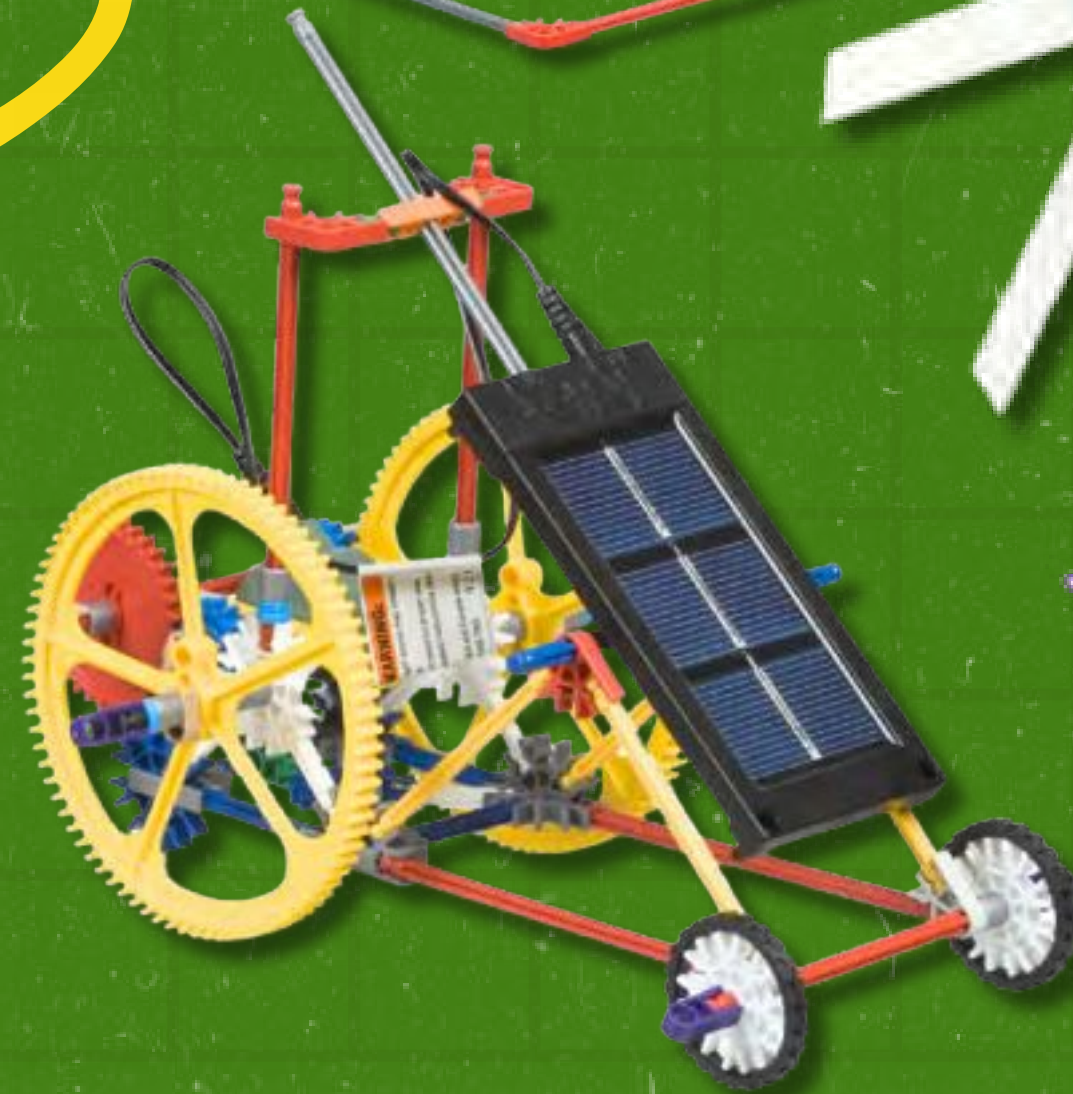
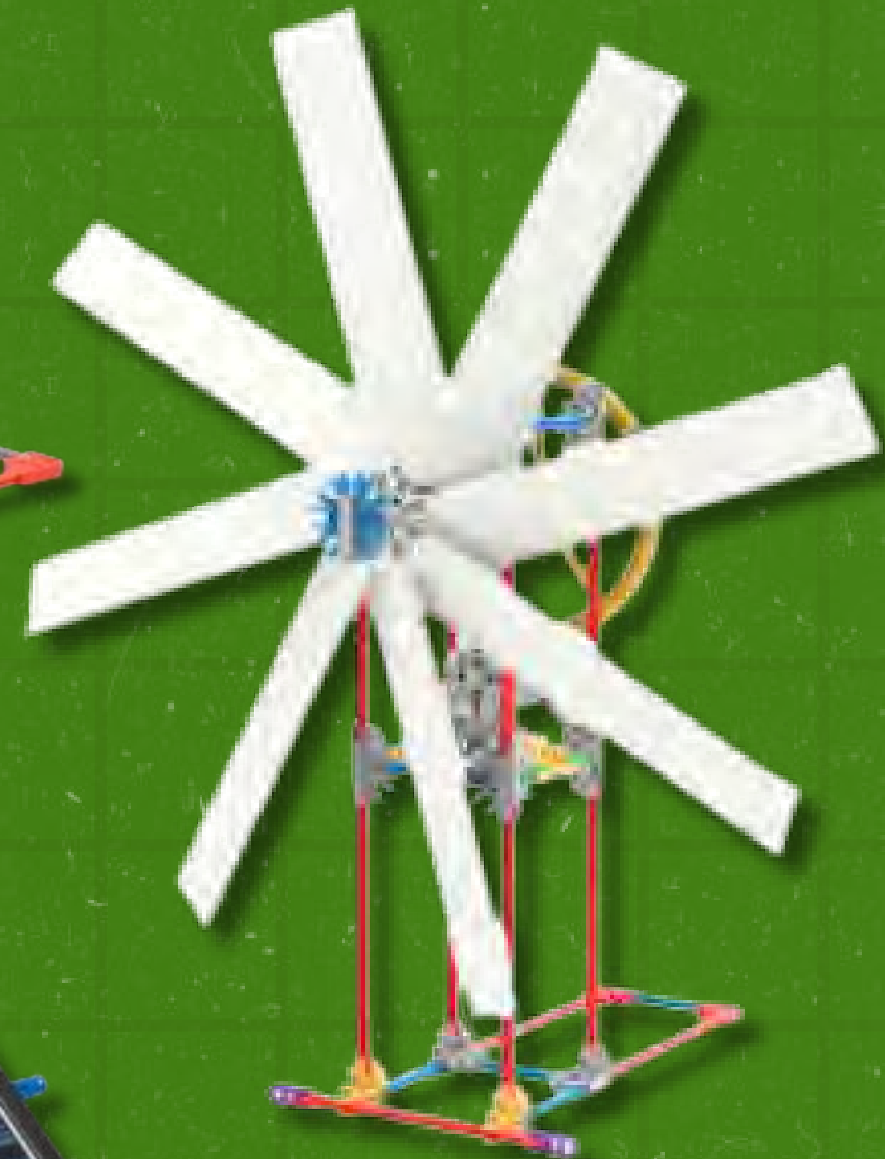


Connectors

You can slide these special connectors together. Push tightly until you hear a "click". Pay close attention to the instructions and position them horizontally or vertically exactly as they are shown.



Review Models



Guidelines

- You are responsible for the pieces on your tray.
- Keep all pieces on the tray until they are being used.
- If a piece falls on the floor, pick it up immediately.
- Please handle the pieces with care.
- Raise your hand if your group needs help.

Safety Caution

- **Never place the solar panel closer than the length of one K'NEX gray rod (7.5 inches) from the light source at any time.**
- **Do not let the small green motors get wet.**
- **Keep blow dryer away from water.**

Presentation Questions

- Describe how your model uses renewable energy.
- Describe how well your model works. What would improve the efficiency of your model so that less energy is wasted as heat or friction?
- Describe 3 ways to make your model work faster or slower.
- List 3 reasons why this model may not work in the real world.
- List the costs and benefits of renewable energy.

Clean Up

1. **Carefully take your models apart** and place the pieces back in the shoebox container.
2. When all of the pieces are in the container, take a tray and a chart and **match up the pieces to the images on the chart**.
3. When all of your pieces are matched up, raise your hand and **wait for an adult to check**. The **adult will COUNT the pieces** before carefully pouring the pieces back into the plastic bag.

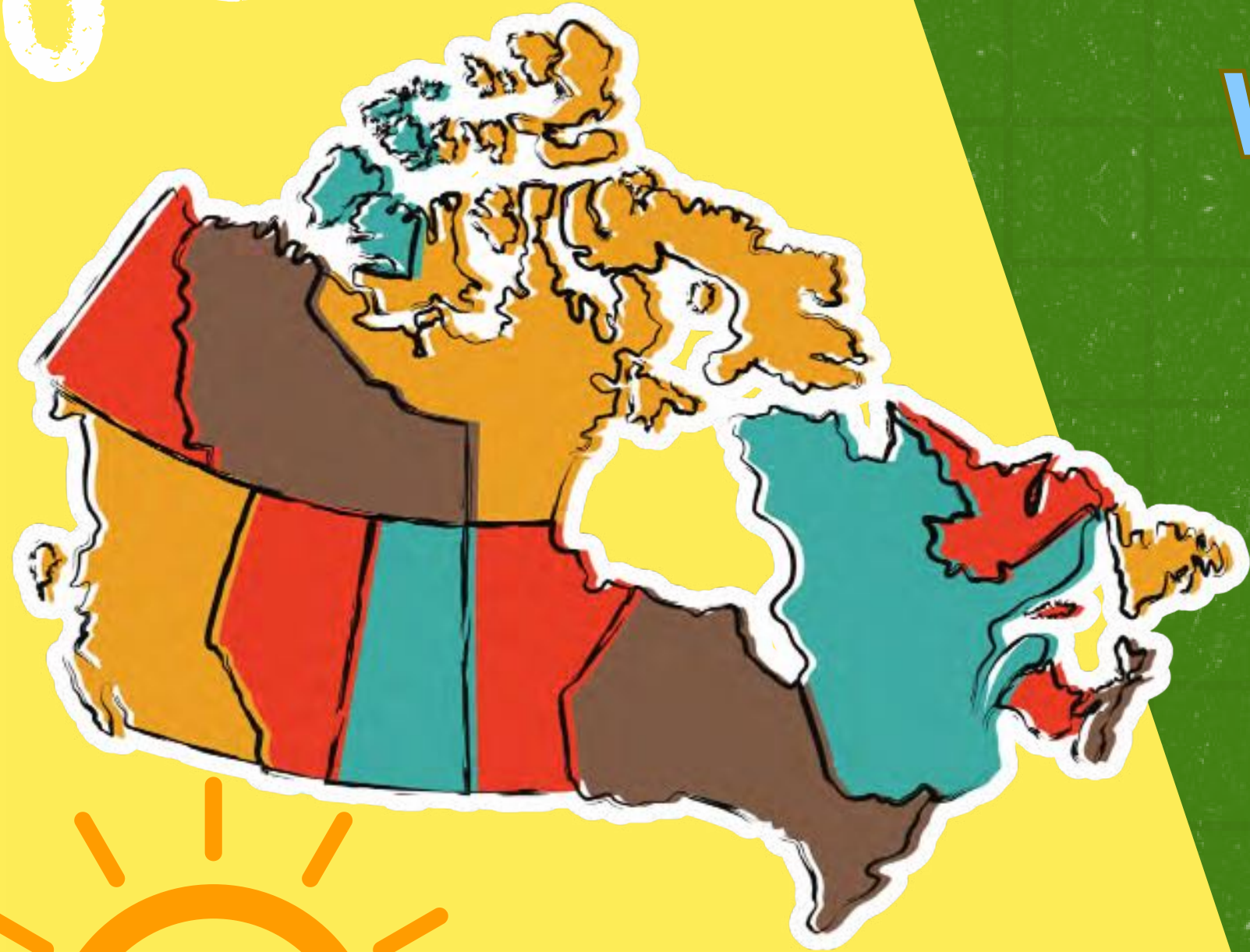


Conclusion

Humans rely on energy every day and we need a reliable source of energy.

- There are renewable and non-renewable sources of energy.
- There is no “right” or “wrong” energy choice, but rather there are benefits and costs of all energy choices that must be considered.

How do various provinces and territories fulfill energy needs?



Water/Hydro

- British Columbia, Manitoba, Quebec, Newfoundland & Labrador, Yukon Territories

Wind

- Prince Edward Island

Fossil Fuels

- Saskatchewan, Ontario, Nova Scotia, New Brunswick, Nunavut Territories





**Let's work
together to create
a sustainable
future!**



Thank You