UNIT 3: HOW IT'S MADE
LESSON 2: POWERING OUR WORLD

Lesson aims:

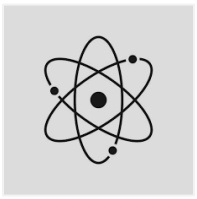
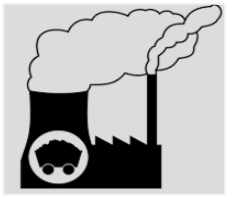
- Identify and express basic ideas about energy resources
- Understand and work with a diagram-based text
- Understand a paragraph on a process
- Understand a talk that provides pros and cons
- Discuss the implementation of a project

Lead-in

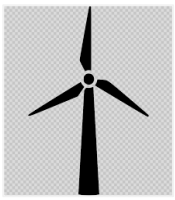
1. *Work with a partner. Look at the image. What is the energy resource? How does it work?*

2. *Match the energy resources from the box with symbols 1-9.*

wind power	**natural gas**	**solar power**	**coal**	**geothermal power**
wood	**oil**	**nuclear power**	**hydroelectric power**	

1.	2.	3.	4.	5.

6.	7.	8.	9.

3. *Read these definitions. In which group is each of the energy resources?*

Renewable energy resources	Non-renewable energy resources
Resources that can be used again and again.	Resources that will not last forever —they will end.

4. *Which of these energy resources are used in Chile? Can you tell the class some examples?*

5. *Which of these energy resources can be used more in the future? Why?*

6. *Which of these energy resources should not be used more in the future? Why?*

Reading

1. *Before reading. Work with a partner. Discuss these statements about solar energy. Are they true? Will they be true in the future?*

a) Solar energy is often used to make water hot, so we can take hot showers.

b) There are places in the desert covered by large PV arrays (a lot of solar panels).

c) Solar energy can be used to power electric cars.

2. *Look at the solar electricity production diagram on the next page. Put the missing words from the box into the following descriptive text.*

distributed	hits	connected	passes	transforms	transmitted

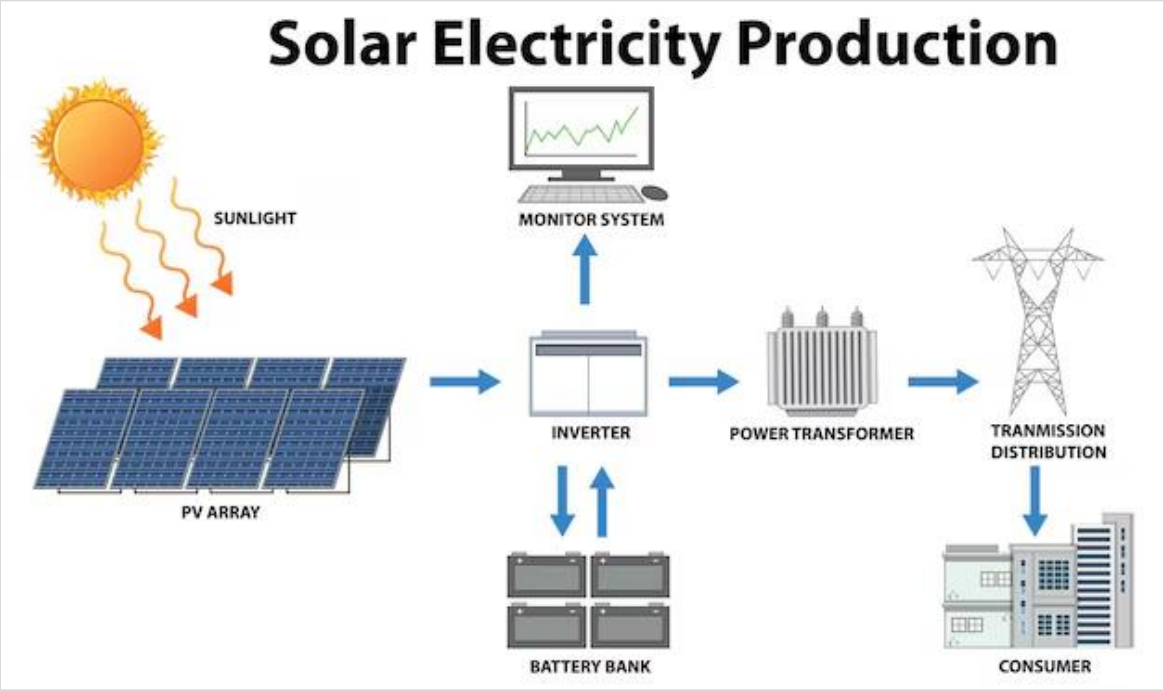
Step 1: Sunlight (1) ..... the PV array.

Step 2: Energy is generated in the PV array and (2) ..... to an inverter.

Step 3: The inverter (3) ..... the energy into usable electric current and passes it to the transformer.

Step 4: The transformer is (4) ..... to the power grid, so the energy is ready to be (5) ..... and distributed to consumers.

Step 5: The electric current is (6) ..... through the transmission distribution system to consumers.



Source: freepik.com

3. Look at the following paragraph that describes the process and…

a) Find a sentence that provides a reason.
b) Find the sentence that says how the process starts.
c) Find the sentence that says the end effect of this process.
d) Find the topic sentence.
e) Find the sentence that gives a generalization of the process.

Solar energy is a form of renewable energy that can produce electricity for consumer use. The energy is transformed into electric current in a process. First, the sunlight passes through the atmosphere and hits solar panels, which are photovoltaic (PV array). The energy generated here passes to an inverter. The inverter is important because it transforms the DC electricity from the panels into AC electricity useful for consumers. The inverter is connected to a monitor system as well as to a battery bank, which stores excess electricity. Most importantly, electricity is transferred from the inverter to a power transformer. The power transformer is important because it provides a connection to the power grid. Electricity is transmitted to consumers via a transmission distribution system. Finally, consumers can conveniently use the electricity that makes their lives possible.

Glossary

PV array = *conjunto de paneles fotovoltaicos* store = *almacenar* power grid = *red eléctrica*

Listening

1. *Listen to a talk by a solar power expert on the pros and cons of solar energy. How many pros and how many cons are mentioned?*

   Pros: …….

   Cons: …….

2. *Decide if the following statements are true or false based on the listening text.*

	True	False
1. Solar energy can be used again and again every day.		
2. Solar energy doesn't pollute, so it has only a small impact.		
3. Solar panels are difficult to install.		
4. Solar panels cost a lot.		
5. Solar panel technology means a cloudy climate is no problem.		
6. The equipment used for solar energy becomes waste after it is used.		

3. *Listen while reading the script at the same time.*

4. *Tell a partner what you think is the biggest pro and the biggest con of solar energy.*

Final Lesson Task

1. *Work with a partner.*

Both solar and wind energy are renewable and rather clean. They are both great, generally non-polluting sources. Which one would be the better choice for San Clemente in the Maule Region?

2. *Consider the pros and cons of both forms of energy. Look at some of their characteristics:*

SOLAR ENERGY	WIND ENERGY
Panels have few moving parts with few cables and a quick installation.	The turbines can be used day and night – 24/7 because there is always wind, so the use of batteries for energy storage is optional.
Although the panels are expensive to install, they are cheap to maintain.	One wind turbine produces as much energy as 24 solar panels.
The panels have a life of 25 years and are mostly wind-resistant.	The turbines need open spaces for their installation and optimal functioning, so urban locations are not appropriate.
The panels are quiet, so they don't generate noise pollution.	The turbines produce noise because of their moving parts, which can kill birds. Also, some people dislike their visual effect on the landscape.
After their life ends, the panels need to be removed and replaced.	The turbines need regular maintenance although their installation is economically viable when you consider the energy they generate.
Long-term energy storage in batteries is still very expensive and not practical because of high cost.	Although the turbines need air movement to function, they function independently of sunny or cloudy weather.

3. *Consider this relevant data about San Clemente:*

San Clemente has about 2,500 hours of sun a year. The sunniest month is January with 360 hours, but June is the cloudiest month with only 75 hours. By comparison, Santiago has about 2,880 hours of sun a year. The sunniest month is January with 366 hours, but June only has 125 hours. Remember that the average day has 12 hours of possible sunlight per day, 365 days a year.

San Clemente as the entire Maule Region is fairly windy. It has an inland location, so it is less windy than the coast. The coast can be very windy, while the central valley of the Maule Region is moderately windy. However, it sometimes gets winds that come from the east over the Andes Mountains.

As of 2025, more electricity is generated by solar photovoltaic arrays than by wind turbines. According to surveys, Chileans prefer solar power over wind power.

4. *Read and discuss the opinions expressed by some people in San Clemente:*

I think it would be wonderful for San Clemente to generate more renewable non-polluting energy. Some areas are in the shadow of hills and mountains, so maybe wind turbines would be better.

If they install solar panels or wind turbines, I hope solar panels are installed. Wind turbines are quite ugly. They also kill birds.

It sounds like a good idea. The solar panels should be put on the roofs of houses. A lot of the land is cherry trees, and they make a lot of money for us from exporting. That land should not be covered with panels or turbines.

5. *With your partner, tell another pair what you recommend for San Clemente: Solar panels or wind turbines?*

   When you present your ideas, include this information:

   - *The energy source (solar or wind)*
   - *The reason for this recommendation*
   - *How San Clemente would benefit*

Exit Ticket

Can you do these things?

	I can understand and work with a diagram-based text
	I can understand a paragraph on a process
	I can understand a talk that provides pros and cons
	I can discuss the implementation of a project

My Top 5 Words from this lesson:

1	
2	
3	
4	
5	

Homework: Self-study

[90 minutes per week]

1. Green is GREAT (listening and vocabulary practice): https://learnenglish.britishcouncil.org/general-english/video-series/britain-great/green-great-part-2

Transcript

Solar energy has become more common and continues to grow. As in the case of any power source, it has a number of pros and cons.

I'll start with the pros. First, solar energy is a renewable resource that's available daily and can be captured almost anywhere. Second, solar energy doesn't produce carbon emissions or other greenhouse gases. It doesn't have a big impact on the environment, so it doesn't cause environmental damage like mining or oil extraction. The third pro: the solar panels need little maintenance, usually just a couple of cleanings a year. Number four: Solar panels can be installed almost anywhere and provide energy independence. An extra fifth pro is a fully operational solar energy system can increase the value of your home, too.

Now, I'll mention the cons that I see. The first con is solar panels can have high upfront costs. They are expensive to install. The second con is solar panels depend on weather conditions, because their energy production is reduced by anything that blocks direct sunlight. Cloudy weather means little, or no energy is produced. Third, solar panels produce emissions during their production, and after some years they need to be replaced. The question is: what do we do with the used panels?

I am excited about solar energy, and see great benefits with its use, but there are some factors that may limit its use.