

## ACTIVITY 1 – SOLAR ENERGY – RESEARCH ACTIVITY

### Solar energy: basic concepts

The human race has learnt to use the solar rays in many different ways. Could you name any of those uses?

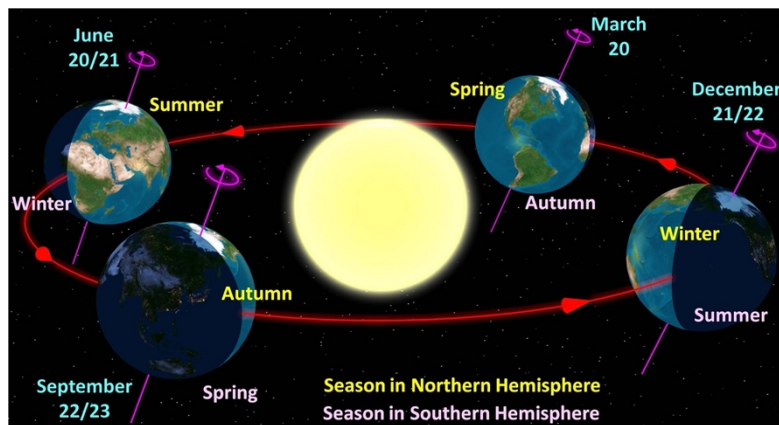
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We already know that the solar power plants use the photons from the Sun. So, are the photons a source of renewable or non-renewable energy?

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How the Sun incises in the surface of the Earth depends on many factors, mainly on the season of the year and our geographical situation.



The Sun moves in two different ways. Name them and explain them.

(1) \_\_\_\_\_

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(2) \_\_\_\_\_

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One of the main factors to consider for where to situate a solar power plant is the insolation. What is *insolation*?

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Why is it so important?

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Taking the above into account, do you think a desert is a good location for a solar power plant? Explain your answer.

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In Spain we have a big variety of energy sources (electric, nuclear, thermal, hydroelectric, wind, solar...). All of them use their own energy source. What is the energy mix of your country?

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Why isn't the energy mix based on just one source of energy?

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Why do you think the energy mix is not only formed by renewable energy sources? Explain your answer.

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### **Solar power plants: types and how they work**

We have already found out that the generation of electricity through solar power is divided into photovoltaic plate and thermo-solar plants. Let's now learn about how they work.

Visit this [link](#) and [this one](#) to look for information about who discovered the photovoltaic effect and when, how it works and what it consists of. Draw a diagram to show the process.

What is the difference between a conventional thermal plant and a thermos-solar plant?

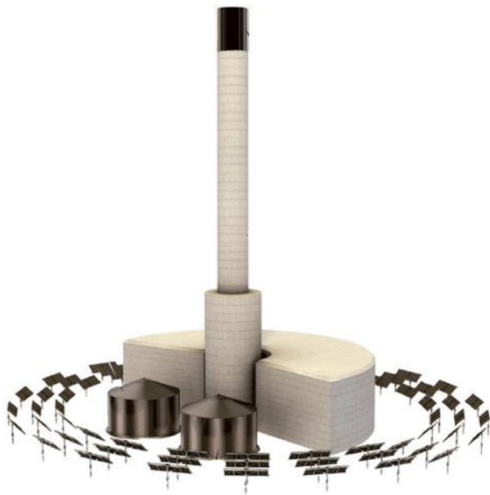
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A thermos-solar plant has different parts. The most important parts are the tower and the heliostat.

Marc, in the following diagram, where these parts are located and then what happens with them.



Tower: \_\_\_\_\_

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Heliostat: \_\_\_\_\_

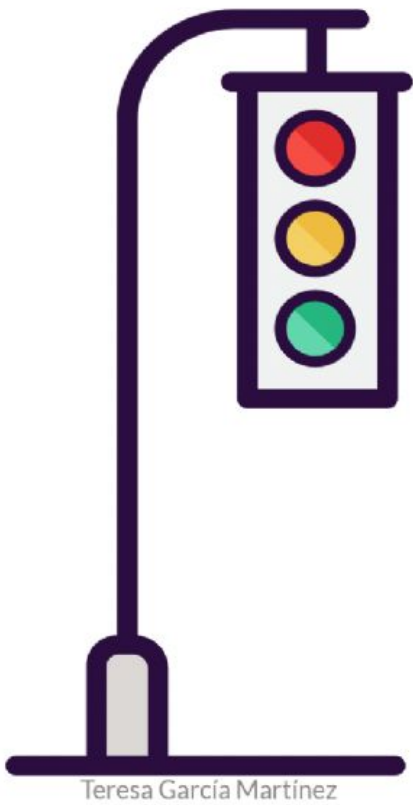
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### **Solar power centrals and the environment**

Using solar power can have advantages and disadvantages. Use the following *Traffic Lights Marker* to debate on the statements below. When you classify the statements in **True/False/Can't Say**, please give reasons for your answers. Everyone in the group must agree on the conclusion. You will then share the conclusions with the class to find out the correct answers.

- The electric generation by solar power does not emit CO<sub>2</sub> to the atmosphere.
- Solar parks don't involve visual contamination.
- Solar parks can generate both during day and night.
- Solar power plants need shade so that the panels and the collectors don't warm up too much.
- Solar panels have a life span of 200 years.
- Solar panels should never be situated on roofs.
- The moonlight can also generate energy with the photovoltaic panels.



Three large, empty, rounded rectangular boxes with colored borders (red, orange, and green) for writing answers.

Solar power plants occupy big land extensions. Does the same happen with the thermosolar plants? Explain your answer.

Three horizontal lines for writing the answer.

Solar light exploitation can be done through active and passive procedures. Explain the difference between both procedures and give an example of each.

Five horizontal lines for writing the answer.

Different power plants have different impacts in the environment. Below you can find three different types of power plants. Identify them and comment on the impact each produce.



