

# 10

## The Sun as a Natural Resource

We'll cover the following key points:

- About the Sun as a natural source of energy
- Importance of Sun for plants
- Uses of solar energy
- Different seasons of India
- Sources of energy : Renewable and Non-renewable
- Conservation of energy



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the QR code.



### Learning Outcomes

**By the end of this chapter, students will be able to:**

- Understand the Sun as a natural and abundant source of energy and its role in supporting life on Earth.
- Learn about the importance of the Sun for plants, including its role in photosynthesis and sustaining the food chain.
- Explore the various uses of solar energy in daily life, such as heating, cooking, and generating electricity.
- Identify the role of the Sun in creating different seasons in India and how it affects climate patterns.
- Differentiate between sources of energy, including renewable (like solar) and non-renewable sources.

### Guidelines for Teachers

The teacher can start the chapter by introducing the concept of the Sun as a vital natural resource, emphasizing its role as the primary source of energy for life on Earth. Discussions can cover the Sun's importance for plants, the uses of solar energy, and its influence on India's seasons. The teacher can also guide students to differentiate between renewable and non-renewable energy sources, fostering awareness about conserving energy to protect the environment for future generations.



**Warm Up**

**Who am I?**

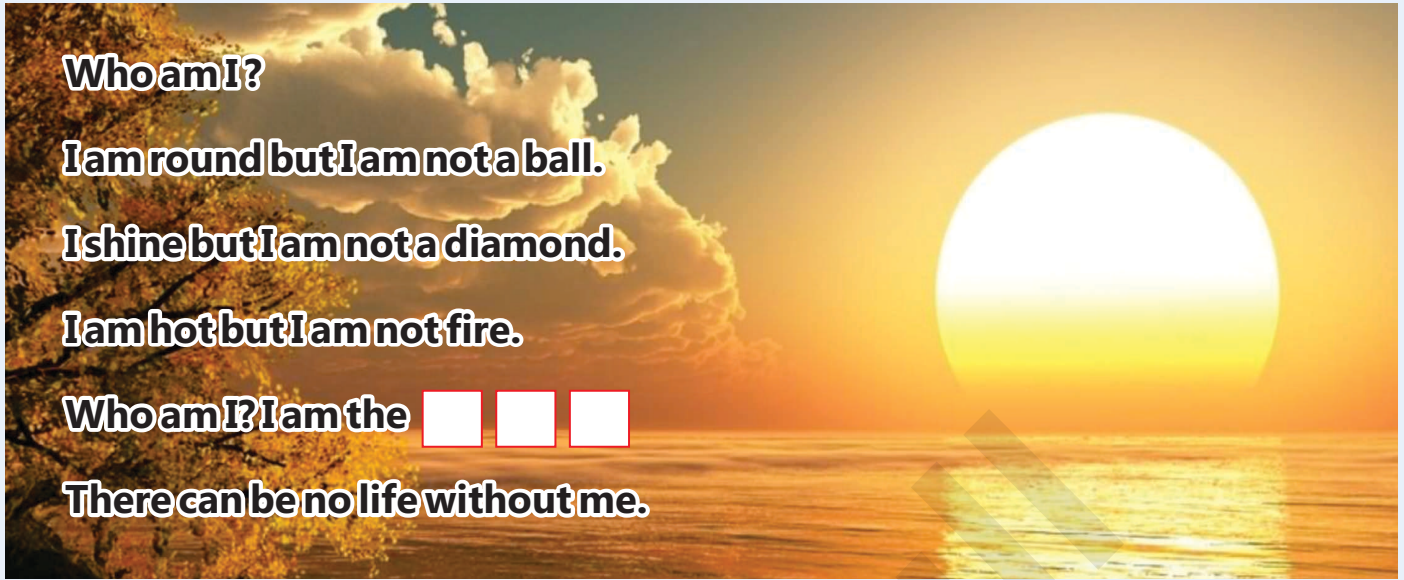
**I am round but I am not a ball.**

**I shine but I am not a diamond.**

**I am hot but I am not fire.**

**Who am I? I am the**

**There can be no life without me.**



**Fun Fact**

The Sun is super far from us—about 93 million miles (150 million kilometers) away! But that's nothing compared to our nearest star neighbors! The closest one, called Proxima Centauri, is 4.24 light-years away. That means it's so far, even light (the fastest thing in the universe) takes over 4 years to get there! Two other stars, Alpha Centauri A and B, are a little farther, at 4.37 light-years. And guess what? One light-year is like traveling 6 trillion miles (or 9.5 trillion kilometers)—that's a LOT of zeros!

## Sun: A Natural Source of Energy

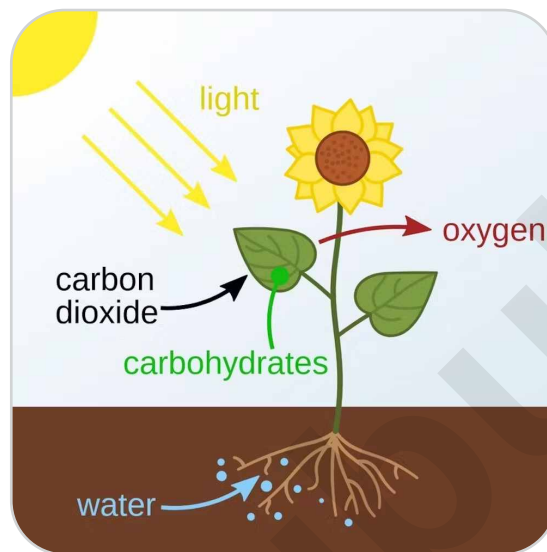
The Sun is the nearest star to us. It is continuously emitting huge amounts of heat and light. It appears big because it is much closer to us than any other star. The Sun is the source of almost all energy on the Earth. In fact, the Sun is the main source of heat and light for all the planets. The Sun is the primary source of the earth's energy. The light and energy that comes directly from the Sun is called solar energy.



## Sun: Useful for Plants

Without the Sun, plants cannot make the food they need to grow, reproduce and survive. Unlike animals, plants are autotrophs, meaning they prepare their own food. They use energy from light of the Sun, water and gases from the air to make glucose. This process of making food in plants is called photosynthesis.

Human beings and animals get solar energy indirectly by eating plants and plant products.



## Uses of Solar Energy

The Sun is full of energy and solar energy comes from sunlight that reaches the earth. This means solar energy has been used by people to cook food, keep warm, and dry clothes. Today, it is also used to generate electricity.

### Did you know ?

Solar energy can also be utilized in vehicles. From cars to trains and now even air planes.

**Solar energy is used today in a number of ways:**

- ✦ Solar cells convert light energy directly into electrical energy. Solar panels that are made of many solar cells are put on the roofs of homes to collect sunlight and turn it into power. If you have seen big shiny panels on the roof of a house, that house is using solar energy. Solar energy can be used to power anything in your house that needs electricity such as to light bulbs and to run water pumps.
- ✦ A solar cooker is a device that uses sunlight to heat or cook food.
- ✦ A solar heater is used to heat water by using the heat energy of sunlight.
- ✦ To use sun rays for drying clothes and towels as sunlight makes the water in the wet clothes evaporate.



Solar Panels



Solar cooker



Solar Heater

## CHECK 'N' MATE

### Critical Thinking


Write 'T' for true and 'F' for false statements.

1. The Sun is the source of almost all energy on Earth.
2. Solar energy is not used in the process of photosynthesis.
3. The Sun is nearest star from us.


☐  
☐  
☐


## Seasons

The sun is an important factor that affects the weather. Weather is the different conditions such as hot, cold, cloudy, rainy or windy, in our surroundings. Weather keeps changing on a day to day basis and also differs at different times of the day.




Take a Task





Watch Remedial



When the weather conditions remain the same for a long period of time, then it is called a season. Seasons are caused because of the Earth's changing relationship to the Sun. The Earth travels around the Sun over a fixed circular path called an orbit, once a year or every 365 days. As the Earth orbits the Sun, the amount of sunlight each location on the planet gets every day changes slightly. This change causes the seasons. The main seasons in India are – Summer, Monsoon, Autumn, Winter and Spring. Human activities change due to the change in seasons.

**Summer:** The summer season starts in the months of April and ends in June. We can experience hot winds during the summer season. The days are longer and the nights are shorter. Drinking a lot of water, fresh juices and tender coconuts are good to beat the heat.





**Monsoon:** The monsoon season starts in June and lasts till September. Most of the days are cloudy and rainy. It is of great help for the farmers. It also causes floods in many regions of India. We use umbrellas and raincoats to protect ourselves from rain.



**Autumn:** Autumn begins in September and lasts till November. In early autumn the weather is sunny, warm and bright. The trees shed their leaves during this season.

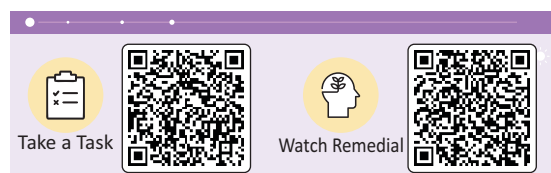
**Winter:** Winter is very cold. It falls in the month of December and ends in March. December and January are considered the peak cold months of the winter season. There is snowfall in some areas.



**Spring:** The spring season in India falls during the months of March, April and May. It comes after a long three months of winter season. The temperature is very pleasant during this season and it looks green and colourful everywhere because of the blooming trees and flowers.

## Sources of Energy: Renewable and Non- Renewable

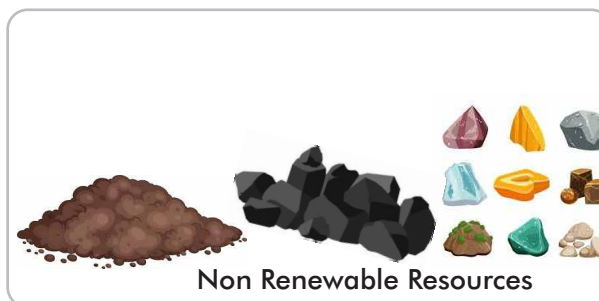
Renewable energy sources are those sources that can be replenished or renewed naturally over time. Air, water, wind, solar energy, etc. are all renewable sources. Renewable sources can be easily renewed by nature.



Non-renewable energy sources are those natural sources that are available in limited quantity. These sources cannot be renewed or replenished in a short duration. Therefore they are also known as exhaustible sources. This form of energy can be easily used up so we should use it carefully and not waste it. Examples - Coal, Natural Gas, Petroleum etc.



Renewable Resources



Non Renewable Resources

## Conservation of Energy

Energy is very important. We need to conserve energy to preserve our natural resources, to reduce pollution and to create a healthier environment for everyone. We can do this by following these easy steps:

### Did you know ?

CFL light bulbs consume up to 80% less electricity than a standard light bulb.

- ✦ Switch off the fans and lights when not in use.
- ✦ Television and video games run on power, turn them off to save on electricity and read a book instead.
- ✦ Take showers instead of baths, and try to limit your showers to five minutes.
- ✦ Use a bicycle or walk to travel short distances.
- ✦ Use public transport or carpool. This can save a lot of non-renewable energy.
- ✦ Use LED or CFL bulbs as they use less energy.
- ✦ Turn off the tap while brushing your teeth and fix the dripping tap if any.
- ✦ Open windows on cool evenings and turn off the A/C.
- ✦ Avoid repeatedly and unnecessarily opening refrigerators and freezers.
- ✦ Plant trees to keep the air fresh and clean.

### Check 'N' Mate



### Critical Thinking

**Fill in the blanks with correct words.**

1. Seasons are caused because of the \_\_\_\_\_ (Moon's/Earth's) changing relationship to the sun.
2. The trees shed their leaves during \_\_\_\_\_ (Spring/Autumn) season.
3. The \_\_\_\_\_ (Winter/Summer) season starts in the months of April and ends in June.
4. \_\_\_\_\_ (Renewable/Non-renewable) sources cannot be renewed or replenished in short duration.

**In the grid below, colour each square according to the following guidelines:**

If it describes a waste of energy, colour the square RED.

If it describes a way to save energy, colour the square YELLOW.

Leaving lights ON in an empty room	Car pooling	Leaving the tap ON when brushing your teeth	Hanging clothes outside to dry
Growing a garden	Turning the TV OFF when no one is watching	Recycling cardboard and magazines	Using solar Panels to heat hot water
Using fluorescent lights or LED lights	Leaving outside lights ON during the day	Watching TV instead of playing outdoors	Closing windows and doors when the air conditioner is ON
Using both sides of a piece of paper	Riding your bicycle instead of taking the car	Taking short shower	Leaving the refrigerator's door open



### In a Nutshell

- ✦ The Sun is the primary source of the earth's energy. It gives us the heat and light energy. All living beings need this energy to live.
- ✦ Solar energy is used in a number of ways-in solar panels, solar cookers, solar geysers and by plants to make food.
- ✦ The main seasons in India are- summer, monsoon, autumn, winter and spring.
- ✦ Energy is available in the form of renewable and non- renewable sources.
- ✦ Air, water, wind, solar energy, etc. are all renewable sources and coal and petrol are non-renewable sources of energy.
- ✦ We need to conserve energy to preserve our natural resources, to reduce pollution and to create a healthier environment for everyone.



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Take a Test



# EXERCISE

That turn curiosity into confidence—let's begin!



## A. Objective Type Questions:

- Which of these is not a source of energy?
  - Wind
  - Flowing water
  - Soil
- Which of the following are NON-RENEWABLE sources of energy?
  - Wind, Water, Sunlight
  - Water, Wood, Wind
  - Coal, Oil, and Natural Gas
- What is the energy from the Sun called?
  - Cold energy
  - Lunar energy
  - Solar energy
- What is conservation?
  - When we protect our resources by using them wisely
  - When we use up everything we have
  - When animals go on a journey.
- Solar cells convert light energy directly into:
  - Electrical energy
  - Wind energy
  - Fuel energy

## B. Very Short Answer Questions:

**Answer in one word:**

- The light and energy that comes directly from the sun \_\_\_\_\_
- The process of making food in plants \_\_\_\_\_



3. When the weather conditions remain the same for a long period of time \_\_\_\_\_

4. The natural sources that are available in limited quantities \_\_\_\_\_

**C. Short Answer Questions:**

1. What is solar energy?
2. How do plants make food?
3. Write the difference between weather and season.
4. Name the five major seasons in India.
5. Why is conservation of energy important?

**D. Answer the Following Questions:**

1. Write the different uses of solar energy.
2. What causes the seasons?
3. Write the difference between renewable and non-renewable energy sources with examples.
4. Write five ways by which you can conserve energy.



## Key Words

## Improving Vocabulary

Autotrophs : A living thing that can make its own food.

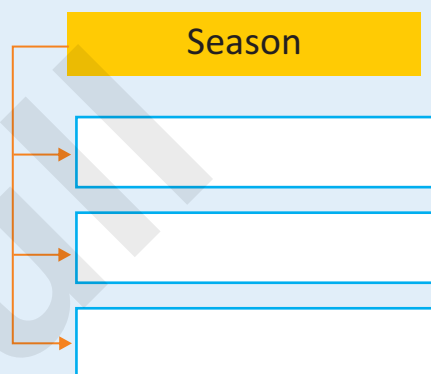
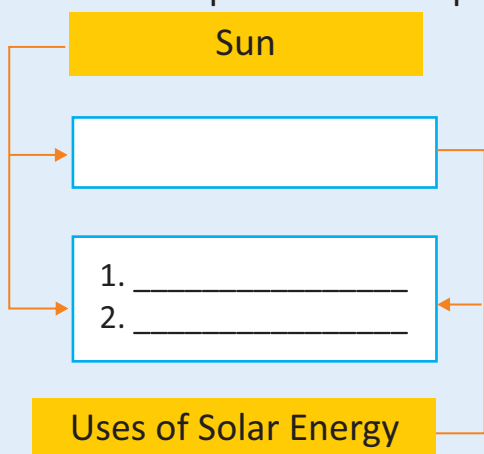
Replenished : Fill up again

Conserve : Protect from destruction.

## Time to Recall

## Remembering and Analysing

Recall and complete the concept map given below.



## Time to Apply

## Applying and Creating

Pratham wants to take his cycle for getting his stationery from the nearby supermarket while his father wants to take the car. Who do you think is correct and why?

## Time to Discuss

## Pondering and Communicating

Carpooling is beneficial on an individual level and for your community as a whole. It can save energy, reduce air pollution and traffic jams while saving your money in the process. What are the different occasions on which you can carpool?

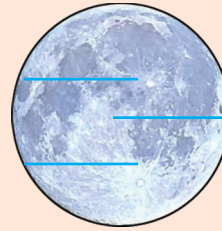
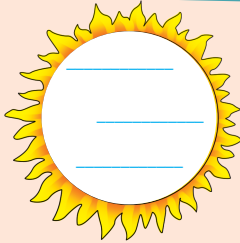


## Time to Observe

Observing, Critical Thinking, Analysing

Write the 'day' words in the sun and the 'night' words in the moon.

sleep play dream study dinner lunch



## Time to Create

Creating and Collaborating

The natural environment provides many natural resources for people. Natural resources are always found on Earth and may be renewable or non-renewable. Natural resources are water, sun, air, plants, animals, rocks and minerals, and fossil fuels.

In the middle of the circles draw a picture of yourself. In each individual circle, draw a picture of how you think you use the named natural resource.



Water



Sun



Air



Plants



Animals



Minerals



Fossil Fuels