

11

Chapter

Nature's Treasure

We'll cover the following key points:

- Ecosystem Resources
- Non-renewable Resources
- Renewable Resources



Hi, I'm EeeBee

Do you Remember:

Fundamental concept in previous class.

In class 5th we learnt

- Energy Resources: Renewable and Non-Renewable

Still curious?

Talk to me by scanning the QR code.



Learning Outcomes

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

- Understand the diverse resources that nature offers, collectively known as Nature's Treasure, and their role in supporting life on Earth.
- Identify and differentiate between ecosystem resources, finite resources, and those that can replenish naturally.
- Explore examples of non-renewable resources such as fossil fuels and minerals, and understand their limited availability.

Guidelines for Teachers

The teacher can start the chapter by introducing the concept of Nature's Treasure, emphasizing the richness of Earth's ecosystems and their contribution to sustaining life. Discussions can focus on the categorization of resources into ecosystem-based, renewable, and non-renewable types. The teacher can also highlight the need for balancing the use of resources with their conservation to protect the environment for future generations.

NCF Curricular Goals and Competencies

This chapter aligns with the following objectives and skills:

- **CG-1 (C 1.4):** Understands the structure, properties, and behavior of various materials and their connections to natural resources.
- **CG-3 (C 3.3):** Explores the relationships between ecosystems and the resources they provide.
- **CG-6 (C 6.1):** Engages in inquiry-based learning to understand sustainable practices and the conservation of Earth's natural treasures.

Ecosystem Resources

The teacher Kavita explains the harmony of plants, animals, and nature in a vibrant, thriving ecosystem to two curious students during a field trip.



Nature is a vast treasure trove, offering countless resources that sustain life on Earth. From lush forests and flowing rivers to the minerals buried deep within the Earth's crust, these resources form the foundation of human existence.

Natural resources are vital for sustaining all forms of life on Earth. They include essential elements like sunlight, water, air, soil, forests, and minerals. These resources are derived directly from nature and are indispensable for our survival and development. For example, sunlight provides heat and light, water from rivers supports hydration and agriculture, and plants and animals supply food. Human society also uses natural resources to create useful items such as furniture, electric bulbs, solar panels, and bicycles, which enhance daily life. These items, created through human effort using natural materials, are categorized as human-made resources.

In History...

- The Indus Valley Civilization (3300–1300 BCE) relied heavily on rivers like the Indus for irrigation, transportation, and fertile soil. Ancient Egyptians referred to the Nile River as the "Gift of the Nile," utilizing its annual floods to cultivate crops.
- Coal was used as early as 2000 BCE in China as a fuel for smelting copper. The first recorded oil well was drilled in China around 347 CE, using bamboo pipes. In 1859, Edwin Drake drilled the first commercial oil well in Pennsylvania, USA, marking the beginning of modern petroleum usage.
- The first known forest reserves were established in ancient India by Emperor Ashoka in the 3rd century BCE. The Yellowstone National Park, established in 1872 in the USA, became the world's first national park, emphasizing the importance of preserving natural treasures.

Types of Natural Resources

Natural resources can be broadly classified into two categories: renewable and non-renewable resources.

Renewable Resources

Renewable resources are those that can replenish themselves through natural processes within a relatively short time frame. Examples include:

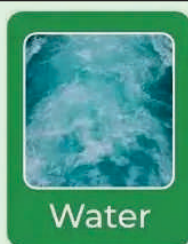
- **Air:** Continually cycled through the Earth's systems.
- **Water:** Replenished through the water cycle.
- **Forests:** Trees grow back over time when managed sustainably.
- **Soil:** Replenished through organic decomposition and weathering.

Non-Renewable Resources

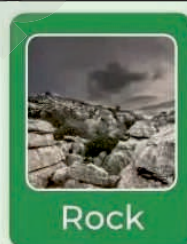
Non-renewable resources, on the other hand, are limited in quantity and take millions of years to form. Once depleted, they cannot be replenished within a reasonable time. Examples include:

1. Coal
2. Petroleum
3. Natural Gas
4. Minerals
5. Rocks

Renewable Resources



Non-Renewable Resources



Impact of Human Activities

The use of fossil fuels in vehicles and industries generates pollutants like smoke and harmful gases, contributing to air pollution. Urban areas often experience poor air quality compared to rural regions with abundant greenery. However, alternatives like electric vehicles are being developed to reduce emissions and mitigate pollution.

Conservation of Natural Resources

Sustainable practices are essential for conserving natural resources and ensuring their availability for future generations. These include:

- Walking or cycling to nearby places instead of using vehicles.
- Using public transportation to reduce individual carbon footprints.
- Adopting renewable energy sources like solar and wind power.
- Minimizing waste and promoting recycling and reuse.
- Planting trees and preserving forests to maintain ecological balance.

Quote on Resource Conservation

A reminder of the importance of moderation comes from **Mahatma Gandhi**:

"Earth provides enough to satisfy every man's need but not for every man's greed."

By prioritizing conservation and adopting sustainable practices, humanity can preserve the Earth's treasures and maintain a harmonious balance with nature.

Let's recall what we know

Apply Concept in Context

Apply

- List some renewable and non-renewable resources you use at home daily. Describe how you can reduce your consumption of each resource to promote sustainability.
- Imagine a community depends heavily on a local forest for firewood, food, and timber. Suggest ways the community can use the forest resources responsibly without depleting them.
- Create a simple model showing how solar panels transform sunlight into energy.

Skills Covered: Creativity, Applicative thinking, Brainstorming, Critical and logical thinking, Observation

Examine Further

Analyse

- The water cycle replenishes freshwater resources. How can human activities disrupt this cycle, and what can be done to prevent such disruptions?
- Fossil fuels are limited and cause pollution when used. Explain how using renewable energy sources like wind or solar power.

Skills Covered: Critical and logical thinking, Research, Brainstorming, Applicative thinking, Problem-solving

SCAN TO ACCESS



Take a Task



Watch Remedial

**Bloom's
Taxonomy**

Self-Assessment Questions

Evaluate

- What are three common renewable resources, and how are they replenished naturally?
- Name one non-renewable resource you use daily and describe why conserving it is important.
- Provide an example of combining renewable and non-renewable resources for a common activity, such as cooking or transportation.

Creative Insight

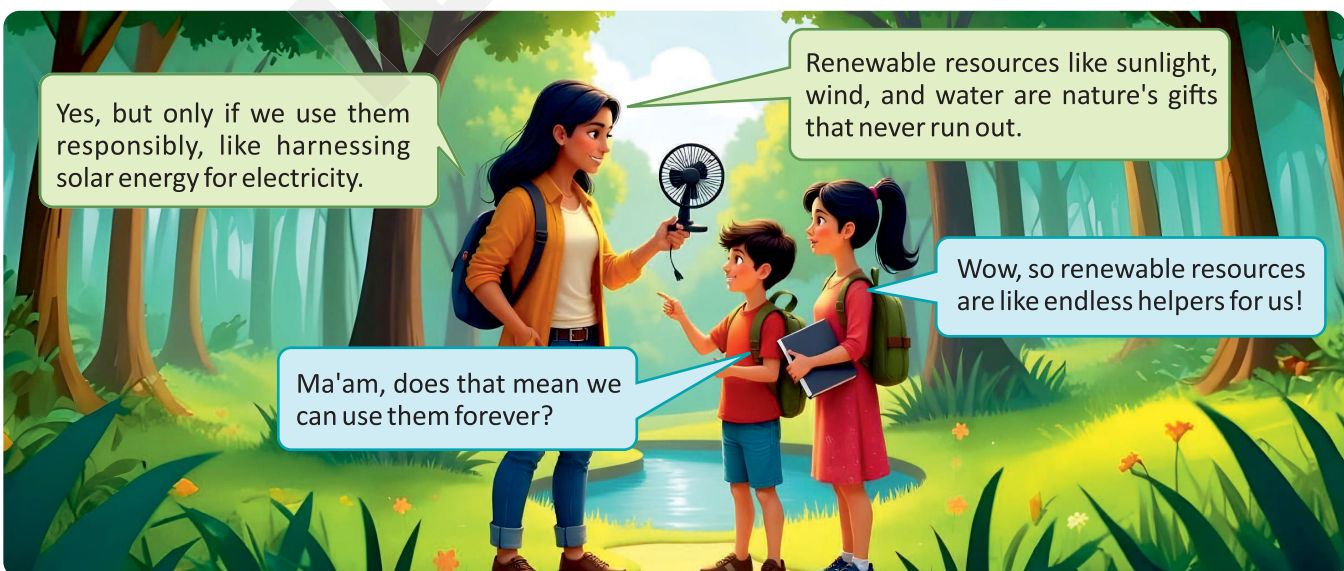
Create

- Imagine you are given a pile of mixed renewable and non-renewable resources, including coal, water, sand, and wood. Create a diagram to show how you would sort these resources into their respective categories.
- Conduct a simple experiment to show soil erosion and its prevention:
 - Fill two trays with soil and tilt them slightly.
 - Leave one tray bare and cover the other with grass or plant leaves.
 - Pour water over both trays and observe what happens.

Skills Covered: Creativity, Critical and logical thinking, Brainstorming, Applicative thinking, Observation

Renewable Resources:

Kavita and two students, Imran and Nancy, stand in a sunny park surrounded by trees, a small pond, and a gentle breeze. Kavita holds a solar-powered fan, demonstrating the concept of renewable resources during a nature walk.



Natural resources play a vital role in supporting life on Earth. Among these, renewable resources are unique because they can regenerate naturally over time, making them an essential component of sustainable living. Unlike non-renewable resources that deplete with excessive use, renewable resources are replenished through natural processes, ensuring their availability for future generations. Let's dive deeper into understanding what renewable resources are, their importance, and examples of how they support life and the environment.

1. Air

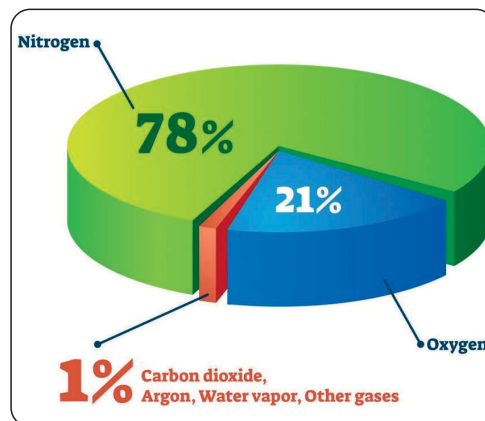
The Importance of Air in Our Lives

Air is a crucial element of life, present everywhere around us. Though invisible to the naked eye, its presence can be felt in various ways. For instance, you can observe the rustling of leaves on a tree, the gentle fluttering of pages in an open book when a fan is switched on, or the flying of a kite in the sky. Air is also what moves our hair in the **breeze**. These small yet significant phenomena highlight the ever-present and dynamic nature of air.

What is Air Composed Of?

Air is not a single gas but a mixture of various gases, each playing an essential role in maintaining life and supporting natural processes. The major components of air are:

- **Nitrogen (78%):** This is the most abundant gas in the atmosphere. While nitrogen is not directly used by humans for breathing, it plays a critical role in plant growth, as it forms the building block of proteins and is vital for the **nitrogen cycle**.
- **Oxygen (21%):** Oxygen is indispensable for life. It supports respiration in humans, animals, and many microorganisms, which is the process through which energy is released from food.
- **Other Gases (1%):** This small but significant portion consists of gases like argon, carbon dioxide, water vapor, and trace gases. Carbon dioxide is essential for plants as it fuels photosynthesis, while water vapor contributes to the water cycle and influences weather patterns.



KEYWORDS

Breeze: A gentle and soft wind that flows with minimal force, often providing a refreshing and calming effect.

Nitrogen Cycle: The continuous process in which nitrogen moves between the atmosphere, soil, and living organisms, supporting life by enabling the formation of essential compounds like proteins.

Air in Motion: Wind

When air moves, it is referred to as wind. The movement of air can vary in speed and intensity:

- **Gentle Breeze:** A soft wind can cool the environment and provide a **soothing effect**.
- **Strong Winds or Storms:** At higher speeds, moving air can become powerful and destructive, shaping weather patterns and causing natural phenomena like cyclones and storms.

The Need for Clean Air

Although air is abundant, its quality is often compromised due to pollution caused by human activities. Harmful emissions from vehicles, industries, and other sources introduce pollutants into the atmosphere, reducing the availability of clean, breathable air. Ensuring the purity of air is essential for the health of humans, animals, and plants.

Some steps to maintain clean air include:

- Planting more trees to absorb carbon dioxide and release oxygen.
- Reducing industrial and vehicular emissions by adopting cleaner technologies.
- Promoting the use of renewable energy sources to minimize air pollution.

2. Wind Power Today: Generating Electricity

In the modern era, windmills have become powerful tools for generating electricity. Large wind turbines, often referred to as modern windmills, are equipped with blades that rotate when the wind blows. The **rotation** of these blades drives a generator that produces electricity. Here's how wind power is generated today:

1. Wind Farms:

- To generate significant amounts of electricity, multiple windmills are installed together in what are known as wind farms. These farms are usually located in flat, open areas with strong and consistent winds.
- In India, several wind farms have been established in states like Tamil Nadu, Gujarat, Maharashtra, and Rajasthan, where wind conditions are ideal for generating electricity.



KEYWORDS

Soothing Effect: The soothing effect refers to something that makes you feel calm, relaxed, or peaceful. For example, soft music or gentle colors can create a soothing effect.

Rotation: It means turning around a central point or axis. For example, the Earth rotates on its axis, causing day and night.

2. Clean and Renewable Energy:

- Unlike fossil fuels, wind power does not produce greenhouse gas emissions, making it an environmentally friendly source of energy.
- Wind energy is also renewable, meaning it will never run out as long as the wind blows, making it a sustainable choice for meeting energy needs.

India's Growing Wind Power Capacity

India has emerged as one of the leading countries in wind energy production. With a vast coastline and flat terrains that experience consistent winds, the country has immense potential to expand its wind power capacity. Key regions contributing to India's wind energy generation include:

- **Tamil Nadu:** Home to several large wind farms, this state is one of the leaders in wind energy production.
- **Gujarat:** Known for its strong coastal winds, Gujarat has invested heavily in wind power infrastructure.
- **Rajasthan and Maharashtra:** These states also contribute significantly to India's wind energy sector.

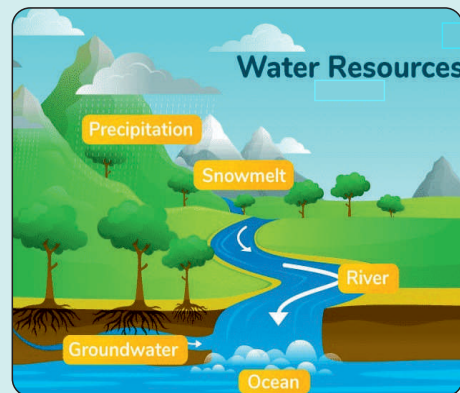
3. Water

Water is an indispensable natural resource crucial for sustaining life on Earth. It is essential for a wide range of activities, including drinking, washing, agriculture, industrial processes, construction, and electricity generation. Despite its abundance, the usability of water is highly limited due to its availability in different forms and the growing demand for it.

Approximately two-thirds of the Earth's surface is covered with water, primarily in the form of oceans and seas. However, the majority of this water is saline and unsuitable for direct human consumption or most agricultural and industrial uses.

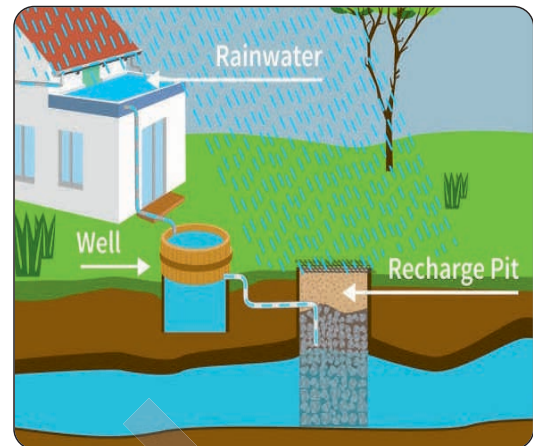
Freshwater, which is found in underground aquifers, rivers, lakes, glaciers, and as snow on the Earth's surface, is the primary source for these needs. Yet, this freshwater constitutes only a small portion of the total water available on the planet, making it a scarce resource in many regions.

Water is not an infinite resource, and its availability is shrinking due to human activities and natural factors. As the demand for water continues to rise, proactive measures to conserve and manage this resource are imperative. By adopting sustainable practices and protecting natural water sources, society can ensure that the needs of both present and future generations are met without compromising the environment. The conservation of water is not merely an environmental concern but a necessity for the survival and well-being of all life forms on Earth.



Rainwater Harvesting

Rainwater harvesting is a sustainable and practical method of water conservation that involves collecting and storing rainwater for future use. This approach is particularly important in the context of increasing water scarcity and urbanization. By capturing rainwater, this method helps reduce dependency on conventional water supply systems and ensures a steady availability of water for various needs. Rainwater harvesting is especially vital in urban areas where concrete surfaces prevent rainwater from percolating into the ground, leading to a significant loss of potential groundwater recharge.



Techniques of Rainwater Harvesting

Rainwater harvesting can be implemented using two main techniques:

1. Rooftop Rainwater Harvesting:

- In this method, rainwater is collected from the rooftops of buildings and directed into storage tanks through a network of pipes.
- The storage tanks can be above ground or underground, and the collected water can be filtered for use in daily activities such as washing, cleaning, and gardening.
- Rooftop harvesting is especially beneficial in urban areas where rooftops provide a significant catchment area for collecting rainwater.

2. Run-off Rainwater Harvesting:

- This method involves collecting surface run-off rainwater from areas such as roads, open grounds, or fields and channeling it into underground storage tanks.
- The stored water can be filtered and used for non-drinking purposes or directed to recharge groundwater aquifers.
- Surface run-off harvesting is particularly useful in areas with heavy rainfall, as it minimizes water wastage while preventing waterlogging and urban flooding.

Traditional Rainwater Harvesting Practices in India

Stepwells: These are large, deep trenches dug into the ground with walls lined with stone blocks. They were designed to collect not only rainwater but also water seeping from nearby lakes, ponds, and rivers. The stepwell system allows water to seep through the stones, ensuring that it is filtered and remains cool even during the hottest months.

4. Solar Energy

The energy from the Sun is one of the most well-known and widely used renewable energy sources available on Earth. The Sun plays a central role in sustaining life on our planet by providing light and heat, which are essential for various natural and human activities. Solar energy is a clean, sustainable, and inexhaustible source of energy, making it a crucial component of efforts to transition away from non-renewable and polluting energy sources.

Solar Panels: Harnessing the Sun's Energy

Solar panels are innovative devices designed to capture and convert solar energy into usable forms of energy such as heat, light, and electricity. These panels consist of photovoltaic cells that convert sunlight directly into electrical energy. This electricity can then be used to power homes, businesses, and industries, making solar panels a highly efficient and sustainable energy solution.

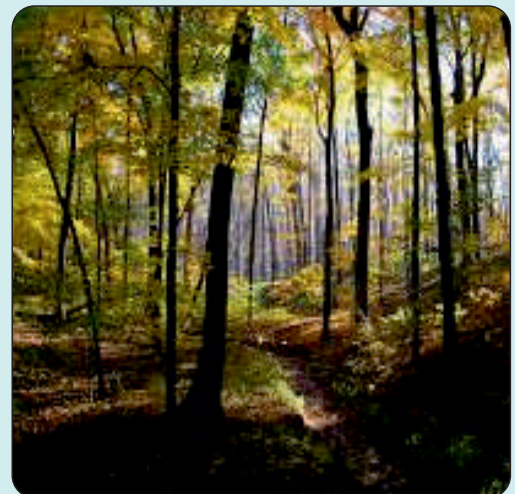


Solar panels have various applications, including:

- **Solar Water Heaters:** Solar panels are used to heat water directly, which can then be used for domestic or industrial purposes.
- **Solar Cookers:** Solar energy is utilized in solar cookers for cooking food, reducing the reliance on traditional fuels like wood or gas.
- **Electricity Generation:** Solar panels provide clean electricity for powering appliances, lighting, and even entire buildings.

5. Forest

Forests are vital to the survival of all living beings on Earth. They serve as the habitat for a diverse range of wildlife, including birds, insects, and larger animals. Forests provide essential resources such as food and shelter to these species, creating a balanced ecosystem where every organism depends on others for survival. This interdependence ensures that food and shelter are available for all life forms. Moreover, forests play a critical role in supporting human populations, particularly tribal communities, by supplying food, shelter, oxygen, and other necessary materials for their sustenance.



Efforts for Forest Conservation

To raise awareness about the importance of forests and the need for their conservation, India celebrates Van Mahotsav, or the "Festival of Trees," during the first week of July each year. This week-long event involves planting new trees and promoting sustainable practices to protect forest cover. The aim of Van Mahotsav is to encourage people to participate actively in preserving forests and protecting natural resources. Such initiatives emphasize the collective responsibility of individuals and communities in safeguarding the environment.



India has a rich history of forest conservation and has been home to several movements aimed at protecting forests from destruction. One of the most well-known efforts is the Chipko Movement, which began in the early 1970s in Uttarakhand. Under the leadership of environmentalists like Sunderlal Bahuguna, this movement gained momentum as local communities, especially women, came together to prevent trees from being cut down. They protected trees by encircling and hugging them, symbolizing their commitment to forest conservation.



Let's recall what we know

Apply Concept in Context

Apply

- Identify three ways you can reduce electricity consumption at home.
- List ten benefits we get from trees.
- What would happen if there were no water on Earth?

Skills Covered: Critical and logical thinking, Brainstorming, Applicative thinking, Problem-solving

Examine Further

Analyse

- Describe human activities that contribute to deforestation. How can we minimize them?
- Investigate modern methods of recycling waste in your locality and prepare a report.

Skills Covered: Critical and logical thinking, Brainstorming, Applicative thinking, Research, Problem-solving

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Self-Assessment Questions

Evaluate

- Define renewable resources.
- What are the differences between renewable and non-renewable energy sources?
- What are wind turbines, and how do they work?
- Define Earth Day.

Bloom's Taxonomy

Creative Insight

Create

How can you use sunlight to heat water at home?

Perform the following activity:

- Take a black sheet, aluminum foil, and a small glass bowl of water.
- Wrap the aluminum foil around the outside of the bowl to reflect sunlight into the water.
- Place the black sheet under the bowl to absorb more sunlight.
- Keep it in direct sunlight for an hour and check the temperature of the water.

Write down your observations and conclusions in your notebook.

Skills Covered: Creativity, Critical and logical thinking, Brainstorming, Applicative thinking

Non-renewable Resources

Kavita and two students, Imran and Nancy, stand near a rocky area with visible coal deposits. Kavita picks up a small piece of coal to explain non-renewable resources.



Non-renewable resources are natural resources that exist in limited quantities and cannot be replenished within a human timescale once consumed. These resources are formed over millions of years through geological processes and include substances like minerals, fossil fuels, coal, petroleum, and natural gas. The limited availability and long formation periods of non-renewable resources emphasize the importance of their judicious use and the exploration of alternative, **sustainable energy sources** to reduce dependency on them.

1. Rocks: An Essential Natural Resource

Rocks are made up of minerals and are the result of geological processes that occur over thousands to millions of years. These processes involve intense heat, pressure, and the gradual accumulation of materials, resulting in the formation of rocks with unique characteristics. Due to the extensive time required for their formation, rocks are considered non-renewable resources, meaning their availability is finite. Different types of rocks are used in specific applications based on their properties. For instance, slate, a fine-grained rock, is commonly used for roofing due to its resistance to weather and its aesthetic appeal. Similarly, laterite, a type of soil rock, is often used as a building material akin to bricks in regions where it is abundant.



KEYWORDS

Sustainable Energy Sources: Energy sources that are renewable and environmentally friendly, such as solar, wind, and hydropower, ensuring long-term availability without depleting natural resources.

Obsidian: It is a shiny, black volcanic rock formed when lava cools quickly. It is often used to make tools, jewelry, or ornaments because of its sharp edges and smooth surface.

Among the most significant types of rocks are granite, sandstone, and marble. Granite, known for its hardness and durability, is frequently used in flooring, countertops, and monuments. Sandstone, on the other hand, is favored for construction due to its strength and ease of shaping. Marble, with its unique patterns and elegance, is often chosen for decorative purposes, including statues, flooring, and interior designs.

2. Minerals

Minerals form the foundation of numerous vital materials and are indispensable to modern life. They are the primary source for extracting metals such as aluminum, gold, copper, and iron. These metals play crucial roles in various industries and everyday items. For example, aluminum is widely used in making aeroplanes and cars, while gold and silver are integral to crafting jewellery and luxury items. Copper and cobalt are essential for electronic equipment and gadgets.



3. Fossil Fuels: A Key Source of Energy

Fossil fuels are natural carbon-based substances that produce heat energy when burned in air or oxygen. They form over millions of years from decomposed plants, animals, and other organisms, making them non-renewable resources. The three primary types of fossil fuels are coal, petroleum, and natural gas.

Coal is a widely used fossil fuel, especially for generating electricity. It is found in several regions across India and plays a significant role in power production.

Petroleum is a thick, dark liquid with a strong odor, commonly refined into fuels like petrol and diesel, which are extensively used in vehicles. However, burning these fuels releases large amounts of carbon dioxide, contributing to pollution and global warming.

Natural Gas, primarily composed of methane, is used for cooking and generating electricity. Compressed Natural Gas (CNG) is a cleaner alternative for motor vehicles, producing less pollution compared to petrol and diesel.

While fossil fuels are crucial for energy and transportation, their excessive use leads to harmful consequences. Burning fossil fuels releases smoke and carbon dioxide, contributing to air pollution and **global warming** by increasing Earth's temperature.

KEYWORDS

Global warming is the rise in Earth's temperature caused by harmful gases like carbon dioxide trapping heat in the atmosphere. It leads to climate changes, melting ice, and higher sea levels.

Conservation of Natural Resources

Conservation of natural resources refers to the responsible and sustainable use of Earth's resources. With a growing population and increasing energy demands, the depletion of resources, particularly non-renewable ones, is becoming a significant concern. If this continues unchecked, many of these resources may eventually run out.

The conservation of resources involves using them judiciously to prevent wastage. This includes adopting practices that reduce energy consumption and transitioning to alternative energy sources, such as solar and wind power. Such actions can help balance the damage caused by earlier excessive use of resources.

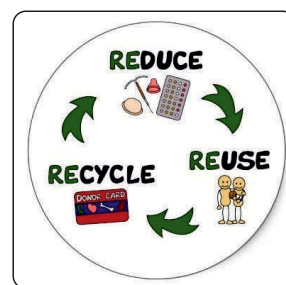


Sustainable Development

Sustainable development refers to meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. It emphasizes responsible use of resources and environmental conservation. The key goals of sustainable development include:

- Identifying causes of resource depletion to address and manage them effectively.
- Preventing waste and over consumption to ensure resources are used efficiently.
- Recycling reusable materials to reduce pressure on natural resources.
- Preventing pollution to protect ecosystems and **biodiversity**.
- Preserving forests and wildlife to maintain ecological balance.
- Using alternative energy sources like solar and wind to reduce reliance on non-renewable resources.

The three Rs—**Reduce, Reuse, Recycle**—form a simple yet effective approach to conserving resources and minimizing waste. By adopting sustainable practices, we can ensure the long-term health of the planet and its resources for future generations.



KEYWORDS

Biodiversity is the variety of all living things, including plants, animals, and microorganisms, in a specific area or on Earth. It helps maintain balance in nature and supports life.

Let's recall what we know

Apply Concept in Context

Apply

- Research how non-renewable resources were historically used for daily life.
- Explain how water is transported from rivers to homes in your locality.
- Which types of energy are commonly used today for cooking and transportation?

Skills Covered: Critical and logical thinking, Brainstorming, Applicative thinking, Research

Examine Further

Analyse

- Write examples of where non-renewable resources like minerals and fossils fuels which are commonly used.
- What are the harmful effects of deforestation on the environment?

Skills Covered: Critical and logical thinking, Brainstorming, Applicative thinking, Problem-solving

Self-Assessment Questions

Evaluate

- Define non-renewable resources.
- Name some commonly used non-renewable resources.
- Explain the benefits of using alternative non-renewable energy sources.
- What do you understand by resource conservation?

Creative Insight

Create

Explain why different non-renewable resources, such as coal, oil, and natural gas, vary in their appearance, texture, and combustion properties.

Perform the following activity at home to justify your answer:

- Collect small samples or images of different non-renewable resources, such as charcoal (to represent coal), a small bottle of cooking oil (to represent crude oil), and a lighter or gas cylinder (to represent natural gas).
- Observe their physical properties like color, texture, and smell.

Write your observations in a tabular format and discuss the conclusions drawn from it with your teacher.

Skills Covered: Creativity, Critical and logical thinking, Brainstorming, Applicative thinking, Observation

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Take a Task



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**Bloom's
Taxonomy**

SUMMARY



Nature provides a vast array of resources collectively referred to as "Nature's Treasure," which sustain all life on Earth. These resources are categorized into **ecosystem resources**, **renewable resources**, and **non-renewable resources**.

Ecosystem Resources

Ecosystem resources include clean air, water, fertile soil, forests, and biodiversity, which result from the interaction of living and non-living components in ecosystems. They support life by providing essential services like oxygen production, food supply, and ecological balance. Human-made resources, like furniture and solar panels, are derived from these natural materials.

Renewable Resources

Renewable resources, such as air, water, forests, and soil, replenish naturally over time through natural processes. For example, air circulates continuously, water follows the water cycle, and forests regrow when managed sustainably. Although renewable, these resources require responsible usage to ensure availability for future generations.

Non-Renewable Resources

Non-renewable resources, like coal, petroleum, natural gas, and minerals, form over millions of years and cannot be replenished within a human lifetime. Fossil fuels, derived from ancient organisms, are heavily used for energy and transportation but contribute to pollution and climate change. Conservation of these resources is essential to mitigate environmental impacts.

Importance of Conservation

As natural resources face overexploitation due to rising populations and increasing energy demands, conservation becomes critical. Sustainable practices, such as walking, using renewable energy, recycling, and minimizing waste, help protect these resources. Efforts like rainwater harvesting and forest preservation play a crucial role in addressing resource scarcity and environmental degradation.

Sustainable Development

Sustainable development focuses on meeting present needs without compromising the ability of future generations to meet theirs. Its key principles include:

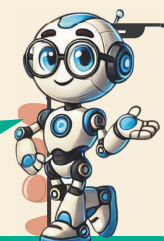
- Reducing waste and overconsumption
 - Recycling materials
 - Protecting ecosystems and biodiversity
 - Using renewable energy sources
- The motto of sustainable development emphasizes the "Three Rs"—Reduce, Reuse, Recycle—to minimize waste and promote resource efficiency.

EeeBee: Your AI Buddy

Explore! **Nature's Treasure**
with EeeBee AI Buddy.

Hi Friend! Use
prompts to ask me
questions about the
chapter we just
finished! eeee, lets go!

Start by
Scanning this
QR Code:





Gap Analyzer™
Take a Test



EXERCISE

That turn curiosity into confidence—let's begin!



A. Choose the correct answer.

- Which of the following characteristics distinguishes living organisms from non-living objects?

(a) Coal	<input type="checkbox"/>	(b) Petroleum	<input type="checkbox"/>
(c) Sunlight	<input type="checkbox"/>	(d) Natural gas	<input type="checkbox"/>
- What is a key characteristic of non-renewable resources?

(a) They replenish quickly	<input type="checkbox"/>	(b) They exist in unlimited quantities	<input type="checkbox"/>
(c) They take millions of years to form	<input type="checkbox"/>	(d) They are not useful for energy production	<input type="checkbox"/>
- Which of the following is an ecosystem resource?

(a) Gold	<input type="checkbox"/>	(b) Clean air	<input type="checkbox"/>
(c) Plastic	<input type="checkbox"/>	(d) Petrol	<input type="checkbox"/>
- Which of these contributes to air pollution?

(a) Solar panels	<input type="checkbox"/>	(b) Wind turbines	<input type="checkbox"/>
(c) Burning fossil fuels	<input type="checkbox"/>	(d) Planting trees	<input type="checkbox"/>
- What is the primary source of renewable energy for solar panels?

(a) Coal	<input type="checkbox"/>	(b) Wind	<input type="checkbox"/>
(c) Water	<input type="checkbox"/>	(d) Sunlight	<input type="checkbox"/>

B. Fill in the blanks.

- Renewable resources like _____ and _____ replenish naturally over time.
- Non-renewable resources such as _____ and _____ take millions of years to form.
- _____ is a renewable resource that provides oxygen and maintains ecological balance.
- Burning fossil fuels releases _____ into the atmosphere, causing pollution.
- The three Rs of resource conservation are _____, _____, and _____.

C. Write True or False.

- Non-renewable resources can replenish naturally within a human lifetime. _____
- Renewable resources like forests do not require conservation. _____
- Air pollution is primarily caused by the burning of fossil fuels. _____
- Solar panels use sunlight to generate electricity. _____

D. Define the following terms.

1. Ecosystem Resources
2. Renewable Resources
3. Non-Renewable Resources
4. Fossil Fuels
5. Sustainable Development

E. Match the columns.

Column A

1. Non-renewable resources
2. Renewable resources
3. Ecosystem resources
4. Conservation of resources
5. Fossil fuels

Column B

- (a) Wind, sunlight, and water
- (b) Cannot replenish naturally
- (c) Clean air and fertile soil
- (d) Reducing waste and recycling
- (e) Coal, petroleum, and natural gas

F. Give reasons for the following statements.

1. Renewable resources need to be conserved even though they replenish naturally.
2. Non-renewable resources are at risk of depletion due to overuse.
3. Burning fossil fuels contributes to air pollution and climate change.
4. Forests are vital for maintaining ecological balance and biodiversity.
5. Sustainable development helps in preserving resources for future generations.

G. Answer in brief.

1. What are some examples of renewable and non-renewable resources?
2. Why is it important to conserve non-renewable resources?
3. How does the use of renewable energy benefit the environment?
4. What role do ecosystem resources play in supporting life on Earth?
5. What does the term "sustainable development" mean?

H. Answer in detail.

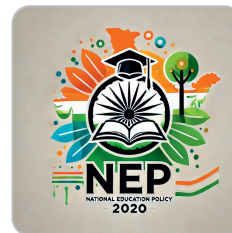
1. Discuss the differences between renewable and non-renewable resources, with examples.
2. Explain how human activities contribute to the depletion of natural resources.
3. Describe the role of forests in maintaining ecological balance and their conservation efforts.
4. How can sustainable development practices help mitigate environmental issues?
5. Compare and contrast the use of fossil fuels and renewable energy sources.





Vocational Training through Digital Platforms

From Class 6, students can learn vocational skills like coding, entrepreneurship, or agriculture through online platforms and simulations.



Skill-based Activity



Conserving Water

STEM

Perform an experiment to demonstrate the process of rainwater harvesting:

- Place a funnel connected to a bottle under rainfall or a water tap.
- Observe how much water can be collected and discuss its possible uses.

Questions:

- How does rainwater harvesting help in conserving water?
- What are the benefits of using collected rainwater for daily needs?

Skills Covered: Observation, Analytical Thinking, Applicative Thinking

Renewable and Non-Renewable Resources

Art

Create a poster illustrating renewable and non-renewable resources, highlighting their uses and conservation methods.

Skills Covered: Creativity, Awareness-building, Logical thinking

Planning a Green Energy Project

Group Activity

Imagine your school is transitioning to solar energy. Design a plan for installing solar panels.

Questions:

- How would you identify suitable locations for the panels?
- What are the benefits of using solar energy for the school?
- How can students and teachers participate in energy conservation?

Skills Covered: Teamwork, Collaboration, Innovation

Investigating the Role of Ecosystem Resources

Case to Investigate

Research how ecosystem resources like water and soil are essential for agriculture.

Questions:

- How does fertile soil contribute to food production?
- What happens when water resources are polluted?
- Suggest ways to protect and preserve soil and water resources.

Skills Covered: Research, Analytical Thinking, Comparative Analysis

Techniques for Sustainable Development

Aligning with SDGs

Research innovative methods for conserving renewable and non-renewable resources, such as rainwater harvesting and solar energy utilization.

Questions:

- How does rainwater harvesting contribute to water conservation?
- What are the benefits of solar panels in reducing dependence on fossil fuels?
- Suggest three innovative techniques to improve the efficiency of resource conservation practices.

Aligned with SDGs:

SDG 6: Clean Water and Sanitation, **SDG 7:** Affordable and Clean Energy, **SDG 12:** Responsible Consumption and Production, **SDG 13:** Climate Action

Skills Covered: Innovation, Problem-solving, Applicative thinking

Role of Renewable Energy in Sustainable Development

Integrated Learning

Write a report on how renewable energy contributes to sustainable development.

Questions:

- What are the advantages of using wind and solar power?
- How does the use of renewable energy reduce pollution?
- Discuss the importance of sustainable energy for future generations.

Skills Covered: Integrated thinking, Logical reasoning, Research