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# Biology

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# CBSE

# Living Science

# Biology

Class 10

**Chapter 5 Sustainable Management of  
Natural Resources**

## LEARNING OBJECTIVES

### What are Natural Resources?

- ❖ Why Should We Manage Our Natural Resources?
- ❖ The Ganga Action Plan

### Conservation of Forests

- ❖ Stakeholders in forest conservation
- ❖ People living in or around forests
- ❖ Various industries using forest produce
- ❖ The nature and wildlife conservationists who want to conserve nature.

### Sustainable Management of Forests

- ❖ People participation in forest conservation

- ❖ The Bishnoi community in Rajasthan

- ❖ Need to recognise local needs
- ❖ *Chipko Andolan*
- ❖ Reviving the degraded *sal* forests

### Conservation of Wildlife

- ❖ Steps for conservation of wildlife
- ❖ Sanctuary

### Conservation of Water

- ❖ Dams and conservation of water

### Water Harvesting

- ❖ Five R's to Save Environment

### Coal and Petroleum – The Fossil Fuels

- ❖ Steps to conserve fossil fuels

## What are Natural Resources?

Anything obtained from natural environment that is required by man to meet his various requirements is known as a natural resource such as air, water, soil and forest. The natural resources are the components of environment and include both abiotic (air, water, soil, minerals, etc.) and biotic (plants and animals) resources.

## Why Should We Manage Our Natural Resources?

**We need to manage our resources for the following reasons:**

- 1. For sustainable development:** It is necessary to properly manage, conserve and replenish the natural resources for sustainable development.
- 2. For future generations:** The management of natural resources requires a long-term perspective so that they can last for generations to come and will not be merely exploited for short-term gains.
- 3. For equitable distribution:** There should be an equitable distribution of natural resources so that everyone has access to these resources and benefit from the development of these resources.
- 4. For preventing damage to environment:** While extracting various natural resources, we should not damage the environment from where these resources are either extracted or used.

## Ganga Action Plan

The Ganga is the largest and holiest river in India with enormous religious importance. It provides water to about 40% of India's population across 11 states in the country flowing from Gangotri in the Himalayas to Ganga Sagar in the Bay of Bengal, covering more than 2500 km. However, Ganga was polluted due to following indiscriminate activities:

- Disposal of human waste and sewage water
- Discharge of industrial chemical effluents
- Immersion of ashes
- Human activities like bathing and washing clothes along the river bed

In order to reduce the pollution load in the river, The Ganga Action Plan (GAP) was launched by the Government of India in 1986. However, despite many efforts, the pollution level did not reduce significantly.

## Namami Gange

In June 2014, the Government of India launched the **Namami Gange plan**. The plan has a budget outlay of ` 20,000 crores for five-year period. **Namami Gange** focusses on **pollution abatement interventions** namely **interception, diversion** and **treatment** of wastewater flowing through the open drains using appropriate measures. The plan also envisages relocation of industries on the banks of Ganga.

## Conservation of Forests

**A forest is a large area of land on which plants, trees and other wild grasses grow naturally. Forests are ‘biodiversity hotspots’.** They are the main places where biodiversity of plants and animals is conserved. Many species of different life forms such as bacteria, fungi, plants, insects, birds, reptiles and other animals are found conserved in forests. Any disturbance in the basic structure of forests is going to damage biodiversity.

### Stakeholders in forest conservation

While considering the conservation of forests, we must look at various stakeholders in forest conservation. These stakeholders include:

- 1. Various people who live in or around forests** and depend on forest produce (products obtained from forests) for their living.
- 2. Various industries using forest produce** These industries use various forest produce, but are not dependent on the forests of any one particular area.
- 3. The forest authorities of the government** which control the resources from forests are responsible for their management.
- 4. The nature and wildlife conservationists/activists** who want to conserve nature.



## People living in or around forests

- They use bamboo to make slats for huts, and baskets for collecting and storing food materials.
- They also need wood to make tools and other implements for agriculture, fishing and hunting.
- They also collect fruits, nuts and medicines from the forests.
- In addition, their cattle also graze in forests or feed on fodder collected from forests.

## Various industries using forest produce

Rapid industrial development has made the country self reliant, however on the other hand, it has also resulted in hazardous environmental problems due to indiscriminate cutting down of forests and over exploitation of natural resources.



Industries use wood to make paper

## Forest authorities

The forest authorities control the resources available from forests. However, quite often they do not involve the local people and ignore their experience and knowledge.



The forest authorities need to look at the local as well as national needs to reserve the forest resources from over exploitation.

### **The nature and wildlife conservationists who want to conserve nature.**

There are many nature and wildlife conservationists who recognise the need to preserve biodiversity as a whole. However, in doing so, sometimes they overlook the needs and requirements of local stakeholders living in and around forests. They should also consider the traditional use of forests and their produce like leaves, herbs, fruits and nuts for fodder, medicines and food respectively, by people living around the forests.

### **Sustainable Management of Forests**

Development means improving people's lives. Thus, sustainable development is the use of natural resources judiciously for a more stable development and also preserving these resources for use by future generations.

### **People participation in forest conservation**

There are many examples of local people living in and around forests working traditionally to conserve forests.

### **The Bishnoi community in Rajasthan**

The Bishnoi community in Rajasthan is respected for its efforts in conservation of forest and wildlife.

Amrita Devi Bishnoi sacrificed her life in 1731 along with 363 other people protecting 'khejri' trees in Khejrli village in Jodhpur, Rajasthan.

### **Need to recognise local needs**

It is necessary to understand that human intervention is equally important in the management of the forests to the extent possible. Thus, we need to ensure a proper balance between economic growth and ecological conservation.

### ***Chipko Andolan***

*Chipko Andolan* was the result of a grass root level effort to end the alienation of people from their forests. *Chipko Andolan* or 'Hug the trees movement' took place in the year 1974 in the Garhwal region, as a result of indiscriminate cutting down of forest trees.

### **Reviving the degraded *sal* forests**

With the active participation of local people in the management of forests, there can be an increase in the forest produce as well as the forests can be conserved. In 1972, the West Bengal Forest Department devised a scheme to revive the degraded *sal* forests by involving local people.

## Conservation of Wildlife

All living organisms like plants, animals and microorganisms which live in their natural habitat and do not have to be domesticated and cultivated are known as wildlife.

### Steps for conservation of wildlife

We can conserve wildlife by taking the following steps:

1. Making killing and poaching a punishable offence
2. Preserving natural habitats
3. Conserving species
4. Conducting regular surveys
5. Captive breeding
6. Preventing deforestation



Wildlife is a natural treasure of mankind

### National Park

It is an area which is strictly reserved for the welfare of wildlife only and where other activities, such as forestry, grazing and cultivation of crops are not allowed. Jim Corbett National Park (Uttarakhand), Kaziranga National Park (Assam), Gir National Park (Gujarat) and Desert National Park (Rajasthan) are some examples of national parks.

## Sanctuary

It is an area which is preserved for the conservation of wildlife. Operations such as cutting of timber trees, collection of minor forest products and private ownership are allowed, as long as they do not affect the animals adversely. For example, Bharatpur Bird Sanctuary (Rajasthan), Chilika Lake Bird Sanctuary (Odisha) and Sultanpur Lake Bird Sanctuary (Haryana).

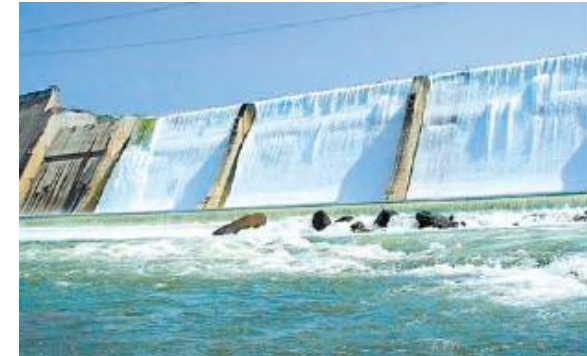
## Conservation of Water

Water is the basic necessity for survival of all life forms on earth. All organisms need water to carry out the various life processes. Existence of life is not possible without water.

## Dams and conservation of water

### Advantages

Many dams have been built by the government to effectively manage the flow of water for generating electricity as well as other purposes.



1. Dams ensure the storage of adequate water for irrigation and also for generating electricity.
2. From these dams, a large amount of water can be transferred through canals to great distances which can be used for various purpose.

## Disadvantages

Dams may not always be advantageous. There may be many disadvantages of dams also.

- 1. Social problems:** A large number of people living in a particular area for centuries get displaced due to building up of dams. These people are largely poor people who do not get any direct benefits from these projects.
- 2. Economic problems:** Construction of dams requires huge amount of public money. However, it does not generate proportionate benefits.
- 3. Environmental problems:** Dams require a large area of land running into kilometres. This leads to deforestation and enormous loss of biodiversity. Many important medicinal plants and other flora and fauna get submerged in the water reservoir and are damaged.

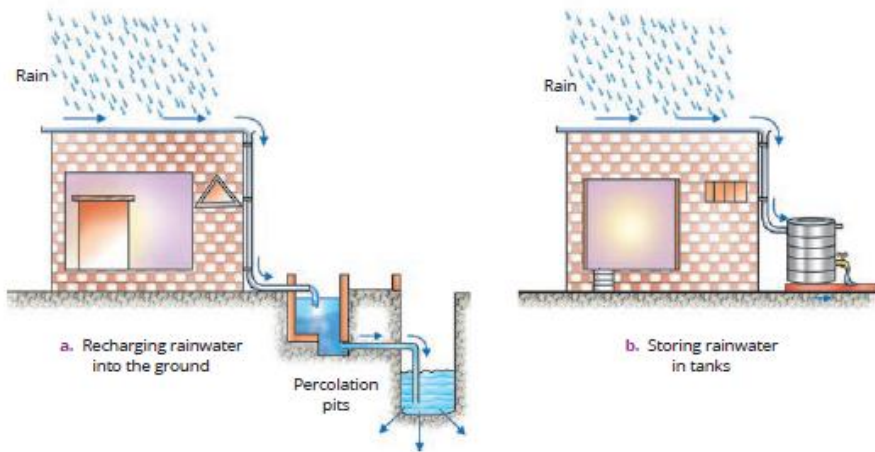
## Water Harvesting

The rainwater goes deep into the ground and becomes our water resource. Water harvesting is the process of collecting rainwater and storing it for direct use or recharging it into the ground for indirect use.

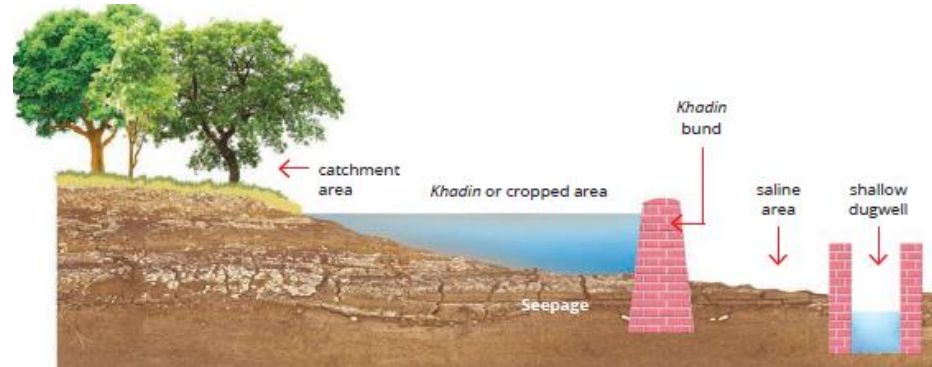
There are many advantages of water stored in the ground.

- Water stored in the ground does not evaporate.
- It is protected from contamination by human and animal waste.

- This water also recharges wells and provides moisture for vegetation over a wide area.
- Also, unlike stagnant water, water stored in the ground is free from breeding mosquitoes.



Rainwater harvesting



*Khadin* system – traditional water harvesting system

## Five R's to Save Environment

**Reduce:** Minimize your needs and reduce the use and abuse of resources; use only what is required. Do not waste.

**Reuse:** Instead of adopting a 'use and throw' approach, try to repair faulty gadgets, specially electronic items, and use them again. Reuse paper, glass bottles and jars. A worn-out dress or towel can be used as a duster or mopping cloth.



**Recycle:** Try to recycle discarded materials by making useful objects from them. Segregate items into recyclable and non-recyclable and send recyclable items for recycling.

**Repurpose:** Instead of throwing away a product which can no longer be used for the original purpose, think carefully and use it for some other useful purpose. For example broken utensils can be used to grow small indoor plants or as a feeding vessels for birds.

**Refuse:** Do not accept or buy resources that you do not need. Say no to things that are not needed. Refuse to buy products that harm you and the environment. Refuse using single-use plastic carry bags.

## **Coal and Petroleum – The Fossil Fuels**

Coal and petroleum were formed from the degradation of biomass millions of years ago. Hence these resources will be exhausted, sooner or later. Even though coal and petroleum are produced by the degradation of biomass, we need to conserve them. Thus, there is a need to find alternative source of energy.

Since coal and petroleum are made up of biomass, in addition to carbon, they also contain hydrogen, nitrogen and sulphur. When these are burnt, oxides of hydrogen, nitrogen, carbon and sulphur are produced.



At high concentration, carbon dioxide is a greenhouse gas, while oxides of sulphur and nitrogen and carbon monoxide are poisonous gases. If the amount of carbon dioxide in the atmosphere is increased, it will cause intense global warming. Hence, the fossil fuels should be used judiciously.

### Steps to conserve fossil fuels

1. Using public transport instead of using our own vehicle.
2. Using fluorescent tubes instead of bulbs in our homes.
3. Increasing the efficiency of machines and engines by ensuring complete combustion.
4. Using stairs instead of lift.
5. Wearing an extra sweater or warm clothes instead of using heater during winters.

## SUMMARY...

- ❖ Anything obtained from natural environment that is required by man to meet his various requirements is known as a natural resource. For example, air, water, soil, forests, etc.
- ❖ The natural resources are the components of environment and include both abiotic (air, water, soil, minerals, etc.) and biotic (plants and animals) resources.
- ❖ Forests are 'biodiversity hotspots'. They are the main places where biodiversity of plants and animals is conserved.
- ❖ Sustainable development is the use of natural resources judiciously for a more stable development and also preserving these resources for use by future generations.
- ❖ Water harvesting is a process of collecting rainwater and storing it for direct use or recharging it into the ground for indirect use.

THANK  
YOU