

**Course Code:MCC102A**  
**Course Title:Environmental Studies**

**Lecture No: 2**

**Title: Natural resources and associated problems**

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# Contents

- **Natural resources and associated problems** : Forest resources: Use and over -exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.



# Intended Learning Outcomes

**At the end of this lecture, students will be able to**

- Describe the term Forest resources
- Explain the different applications of Forests
- Discuss forest resources in India



# Natural resources and their associated problems

- Natural resources' utilization have associated issues
- Exploitation of these resources should be based on weighing the pros and cons of its utilization.
- The issues are not limited to non-renewable resources. Even use of renewable resources have issues.
- Benefits and issues with use of the following resources will be discussed
  - Forest
  - Water
  - Minerals
  - Food
  - Energy
  - Land



# Forest Resources

- The word forest is derived from a Latin word “Foris” means Outside (a possible reference to a village boundary or fence separating the village and the forest land)
- Forest are one of the most important natural resources of the earth. Approximately 30% of the earth’s total area is covered by forests
- Forests are divided into three different layers: the forest floor, the understory and the canopy
  - The forest floor is comprised of soil, dead plants and animals and small plants such as grasses and wildflowers
  - The understory contains small trees or bushes and is also called the shrub layer
  - The canopy is made up of the leaves and branches of the trees that dominate the forest



# Forest Resources

- The word forest is derived from a Latin word “ Foris” means Outside
- Forest are one of the most important natural resources of the earth.
- Approximately 1/3<sup>rd</sup> of the earth’s total area is covered by forests



# Indian Scenario

- In India forest cover Overall, 21.02% of the country's geographical area is now under green cover(**as per 2009\* data**) The total forest cover in India is **6,90,899 km<sup>2</sup>**
- Forest cover in India is defined as all lands, more than one hectare in area with a tree canopy density of more than 10%.

Very Dense Forest	All lands with tree cover of canopy density of 70% and above
Moderately Dense Forest	All lands with tree cover of canopy density between 40% and 70%
Open Forest	All lands with tree cover of canopy density between 10% and 40%.
Scrub	Degraded forest lands with canopy density less than 10 %.
Non-forest	Any area not included in the above classes.





# Functions of Forests

- The functions of forest may broadly classified into following categories
- **Protective Function**
- **Productive Function**
- **Regulative Function**
- **Accessory Function**





# Protective Function

- These functions include the
  - prevention and mitigation of **erosion** and loss of soil,
  - preservation of **drinking water resources**,
  - **stabilization of stream banks** or sand dunes, and
  - reduction of **air and noise pollution**.
- Forests also play a role **protecting human infrastructures** from avalanches, landslides and rock fall and against natural or induced hazards as storms, fires, floods, etc.

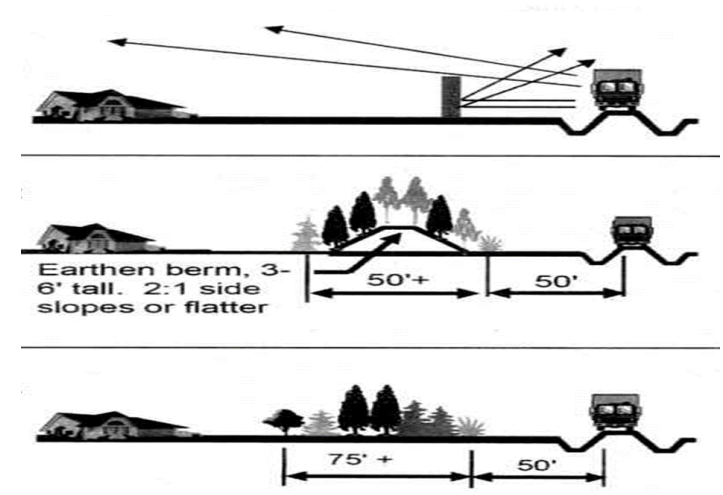


# Protective Function



**Soil erosion** :View of mountains in the Quiche province in Guatemala

**Flood** :Forests delay accumulation of flood water



**Noise:** Urban forests absorbing noise



# Protective Functions

- Forest Provide protection against Soil erosion, Droughts, floods, noise, radiations



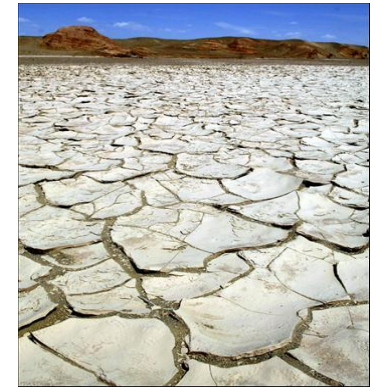
**Soil erosion**



**Soil erosion**



**Floods**



**Droughts**

# Productive Functions

- This describes the **economic and social utility** of forest resources to national economies and forest-dependent people.
- **Wood** is one of the main forest product.
- Apart from wood, non-wood products derived from forests are important sources of local income. E.g. **Honey, firewood, fruits** and berries, etc.
- **Sustainable use** of these resource are a priority to ensure that future generations have productive forests.





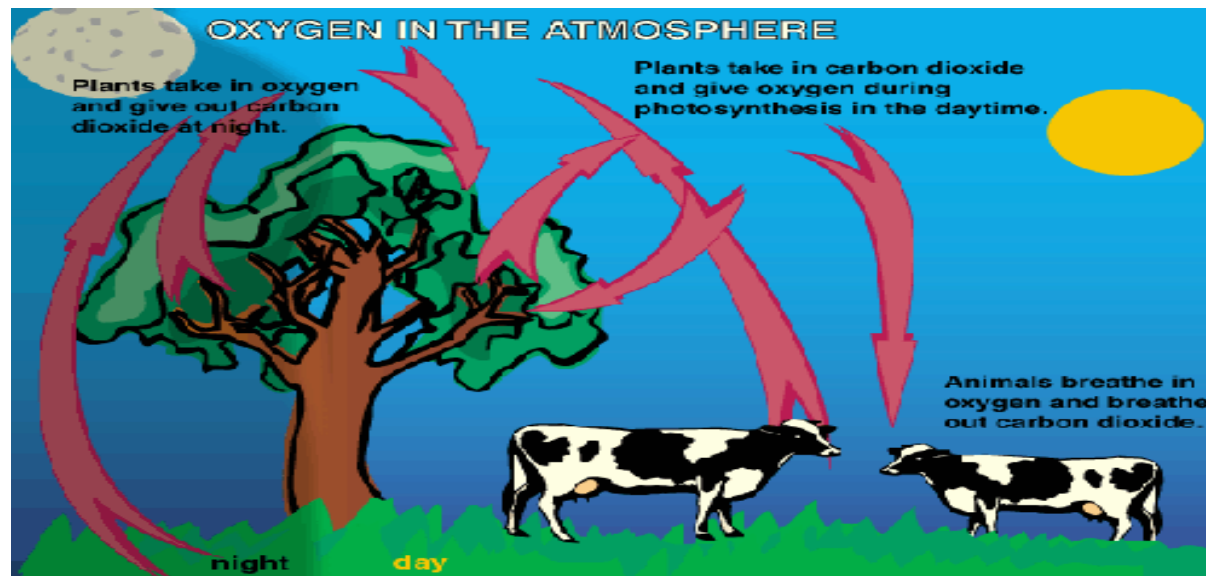
# Productive Functions

- Forest Provide various products like, gum resins, **medicines, honey, pulp**, bamboo, timber, and fruits

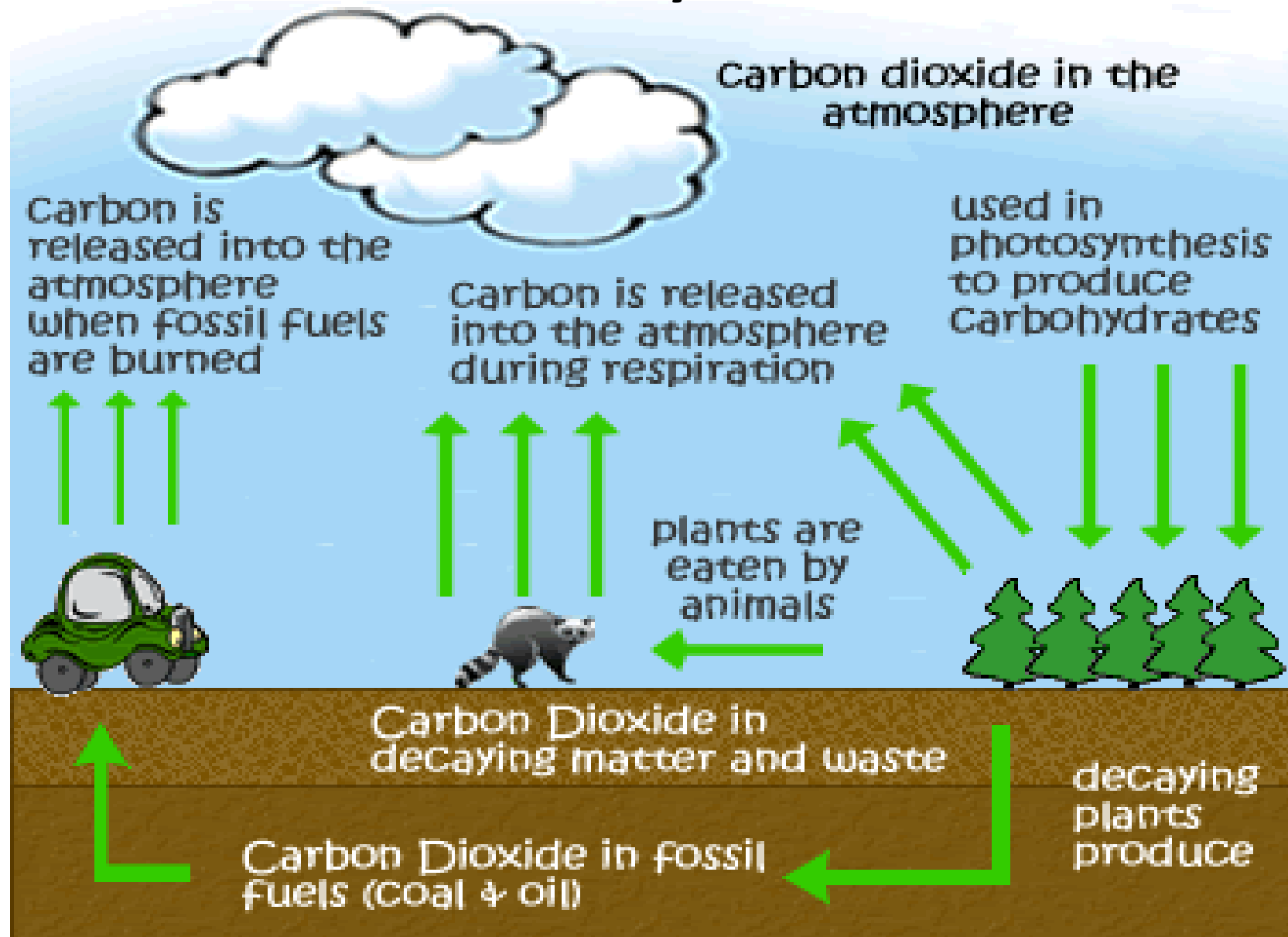


# Regulative Functions

- They help to maintain the balance of carbon dioxide and oxygen between plants and animals
- They increase the humidity of air by transpiring large amount of water vapor to the atmosphere. This regulates the temperature and the water cycle.
- Due to a large area covered with vegetation, forests prevents air pollution and global warming



# Carbon Cycle.....





# Accessory Function

- This include the role of forests in aesthetics, recreation and habitat of wildlife species
- Urban forest add to the aesthetics of town planning and provide a green cover in urban localities.
- Recreation is usually in the form of safaris and nature walking.
- Habitat includes various types of flora and fauna



# Accessory Function

- Forest provides aesthetics, habitat to various flora and fauna besides that it also has an recreational value.



# Ecological Importance or uses of Forests

## Regulation of global climate and temperature

- Forest play a crucial role in regulation of global climate and temperature as forest cover absorb the solar radiations that would otherwise be reflected back into the atmosphere by bare surface of the earth.
- Transpiration of plants increases the atmosphere humidity which affects the rainfall, cools the atmosphere and thus regulate the hydrological cycle





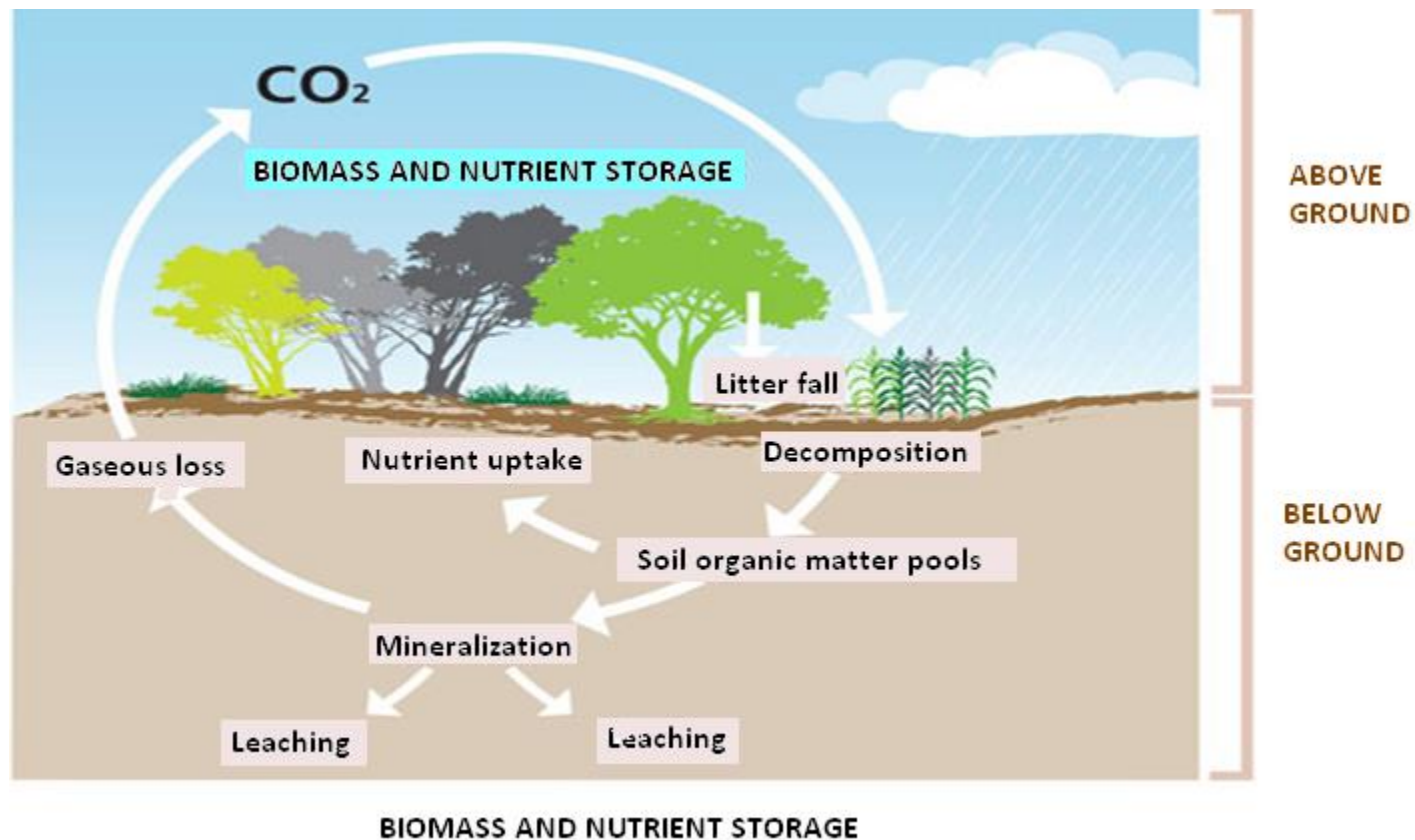
# Reduction of Global Warming

The main green house gas  $\text{CO}_2$  is used by forests for photosynthesis process the forest act as a sink for  $\text{CO}_2$  there by reducing the green house effect due to  $\text{CO}_2$



# Production of Oxygen

During Photosynthesis process forest releases oxygen a very important gas for human survival thereby are called as lungs of earth.



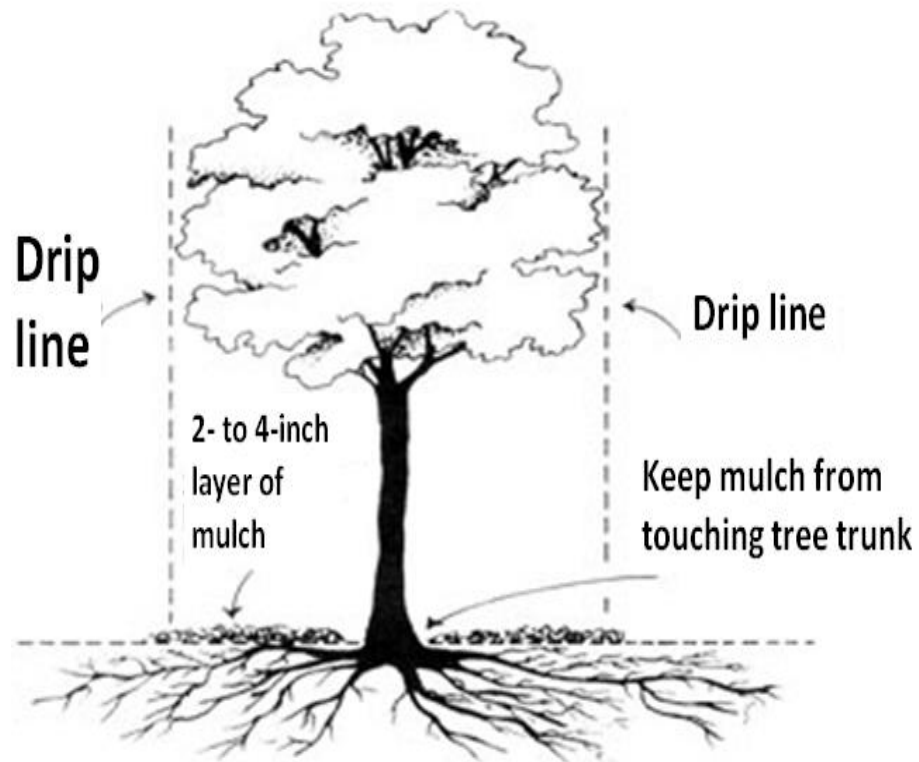
# Conservation of Soil

- They prevent soil erosion by binding the soil particles tightly in their roots
- They also reduce the velocity of wind and rain which are chief agents causing erosion

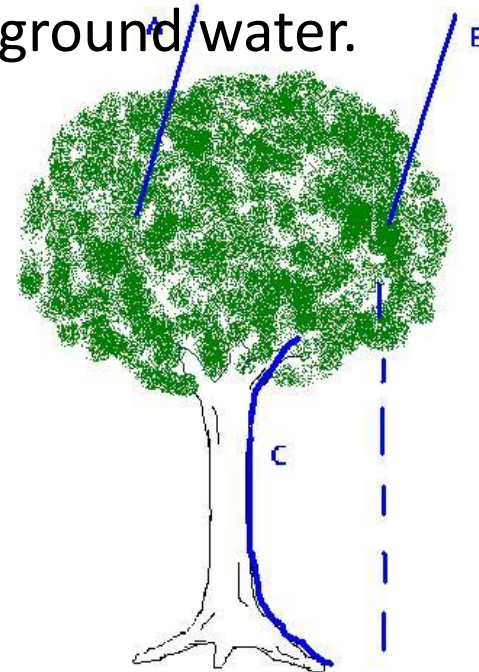


# Improvement in fertility of Soil

The fertility of soil increases due to the decay of forest litter



The forest act as a giant sponge they slow down runoff, absorbing and holding water that recharges springs, streams, and ground water.





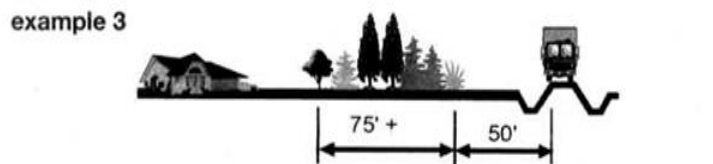
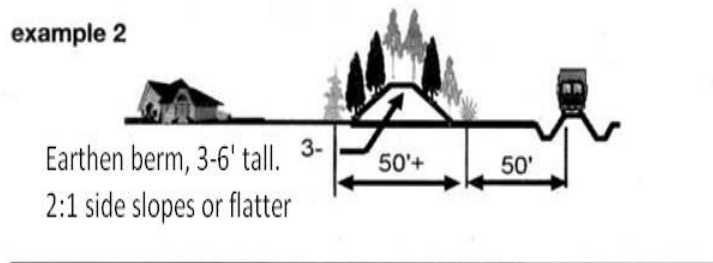
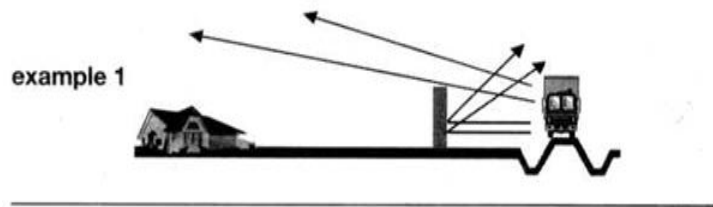
# Habitat to wild life



# Absorption of Noise and Air Pollution

Forest cover absorbs the noise and helps in preventing noise pollution

Forest absorbs many toxic gasses and air pollutants and can help in keeping air pure



# Summary

- Forest are one of the most important natural resources of the earth with approximately  $1/3^{\text{rd}}$  of the earth's total area is covered by forests
- Forests are divided into three different layers: the forest floor, the understory and the canopy
- The functions of forest may broadly classified into
  - Protective Function
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  - Regulative Function
  - Accessory Function



# Summary Contd.....

- Forests also play a role protecting human infrastructures from avalanches, landslides and rock fall and against natural or induced hazards as storms, fires, floods, etc.
- Forest Provide various products like, gum resins, medicines, honey, pulp, bamboo, timber, and fruits
- Forests maintain balance of carbon dioxide between plants and animals, regulates temperature and water cycle, prevents air pollution and global warming

