

Course Code:MCC102A

Course Title:Environmental Studies

Lecture No: 3

Title: Natural resources and associated problems

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Topics

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 effect of dams on tribes
- Compare Deforestation and Afforestation
- Explain different types of forests
- Discuss effects of Deforestation



Economical Importance of Forest

- **Timber:** Wood used for commercial purposes like for making furniture and other items like boats, bridges and other day to day uses.
- **Fuel Wood:** The wood is used as fuel for cooking and other purposes by poor people.
- **Raw material for wood based industries:** forest provide raw material for various wood based industries like paper and pulp, sports goods, furniture, match boxes etc.

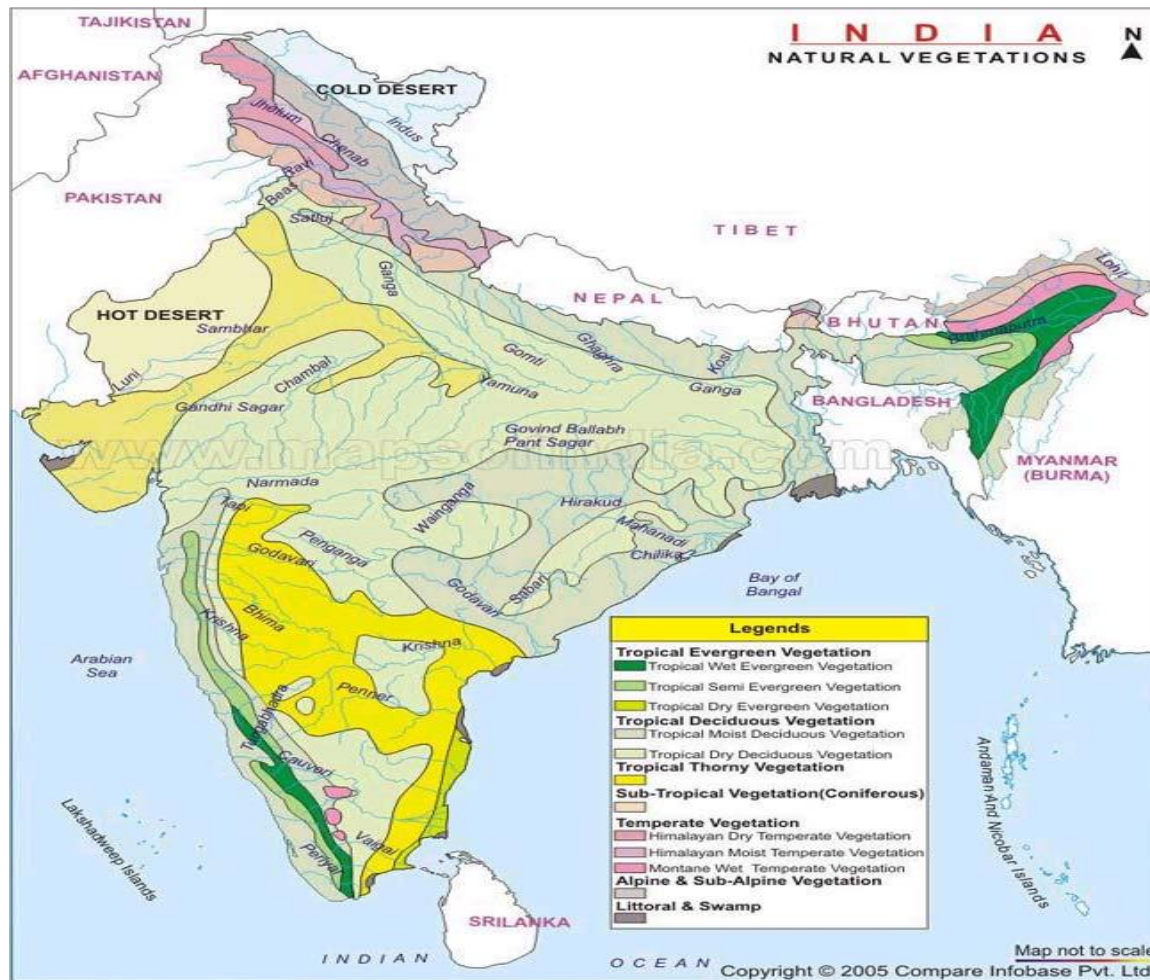


Economical Importance of Forest

- **Food:** Fruits, roots, leaves of plants and trees along with the meat of forest animals provide the food to the tribal people.
- **Miscellaneous Products:** Miscellaneous products like, resin, gums, oils, medicines, honey are provided by forests



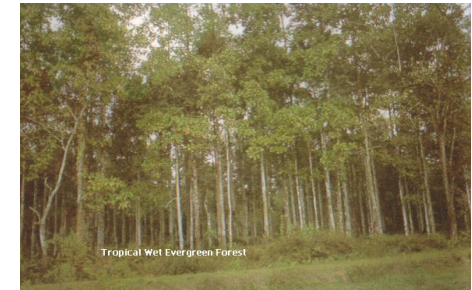
Types of Forests in India



Types of Forests in India

Moist Tropical Forest

- a) **Tropical wet evergreen:** Western Ghats (Maharashtra, Karnataka, Kerala)
- b) **Tropical semi evergreen:** Lower hills of western Ghats.
- c) **Tropical moist deciduous:** Dehradun, mahableshwar
- d) **Damp Forests:** Sunder bans, Bengal delta, and Andaman.



a



b



c

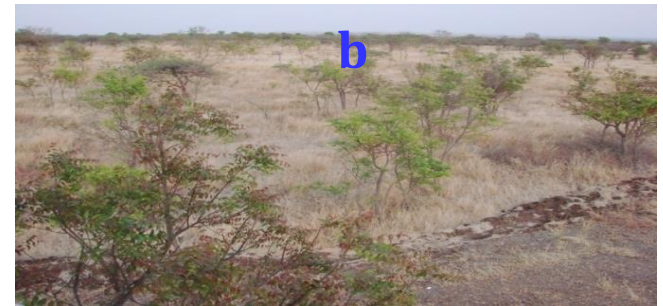
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Types of Forests in India

Dry Tropical forests:

- a) **Tropical dry deciduous:** Madhya Pradesh, Uttar Pradesh
- b) **Tropical thorn forest:** Delhi, Punjab, Gujarat
- c) **Tropical dry evergreen:** Eastern Ghat (Andhra Pradesh, Tamil Nadu)



Tropical Forests

- This ecosystem experiences high average temperatures and a significant amount of rainfall.



a

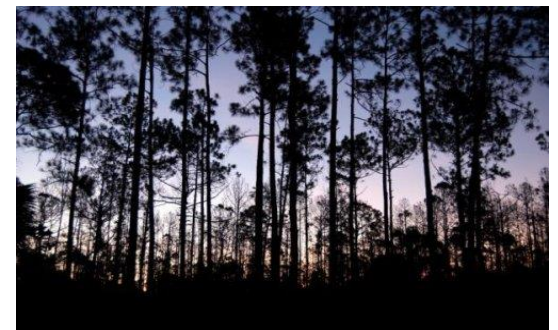
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Coniferous Forests

- a) Subtropical broad: Shillong, Nilgiris
- b) Subtropical pine forest: Arunachal Pradesh, Kashmir
- c) Sub Tropical dry evergreen: Foot Hills of Himalayas.



c



Temperate Forests

- a) Montana Wet temperate: Nilgiri, Palmi Hills
- b) Himalayan wet temperate: Assam, Himachal Pradesh
- c) Himalayan dry temperate: Kashmir



Main characteristics

- Wide leaves, large and tall trees and non seasonal vegetation.
- Temperate forests can be further distinguished by weather patterns and geographical features that favor the predominance of certain kinds of trees.
- In temperate coniferous forests, evergreen conifers predominate, while in temperate
- Broadleaf and mixed forests, a more even distribution exists between evergreen and deciduous trees.



Sub Alpine Forests

- a) Moist alpine scrub- high Himalayas
- b) Dry alpine scrub: Sikkim



Main characteristics

- Among the 16 different forest types of the country, the most common is
- **Tropical dry deciduous (38.7%)**
- **Tropical moist deciduous (30.9%)**
- **Tropical thorn (6.9 %)**
- These 3 types of tropical deciduous forests accounts for more than 76.5 % of forest area in India. Nearly 96 % of forests are owned by government and, 2.6 % by corporate bodies and rest are in private ownership.



Deforestation

- Forest are exploited since early times for humans to meet human demand
- The permanent destruction of forest is called deforestation

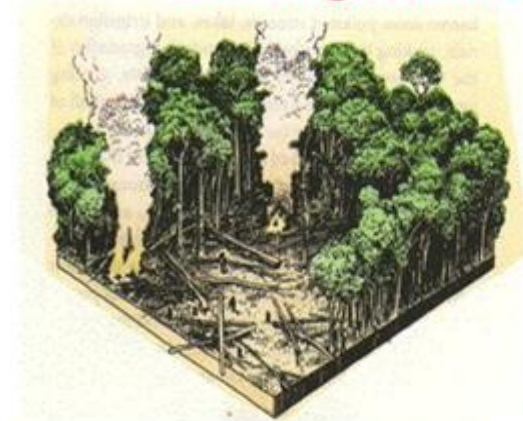


Causes of Deforestation

- **Population explosion:** Population explosion is the root cause of all the environmental problems, vast area of forests are cleared for human settlement
- **Shifting Cultivation:** It is a traditional agroforestry system widely practiced in north eastern region of country in which felling and burning of forests followed by cultivation of crop for few years and abandon of cultivation allow forests for re-growth cause extreme damage to forest.



Shifting Cultivation



Causes of Deforestation

- **Growing food demand:** To meet the food demand of rapidly growing population more and more forests are cleared off for agricultural purpose.
- **Fire wood:** Increasing demand of wood for fuel increases pressure on forests.
- **Raw material for wood based industry:**
Increasing demand of wood for making furniture, plywood, match box etc results into tremendous pressure on forests.



Causes of Deforestation

- **Infrastructure development:** Massive destruction of forest occurs for various infrastructure development like, big dams, highways projects etc.
- **Forest fires:** Forest fires may be natural or man made cause a huge loss of forest
- **Over grazing:** Overgrazing of land by cattle result into soil erosion, desertification.
- **Natural forces:** Floods, storms, heavy winds, snow, lightening are some of the natural forces



Effects of Deforestation

- Deforestation adversely affects and damages the environment

The adverse effect of deforestation are discussed below:

- **Soil erosion:** The soil gets washed away with rain water on sloppy areas in the absence of trees leading to soil erosion.
- **Expansion of deserts:** Due to strong winds laden by rock dust, land mass gradually gets converted in atmosphere.



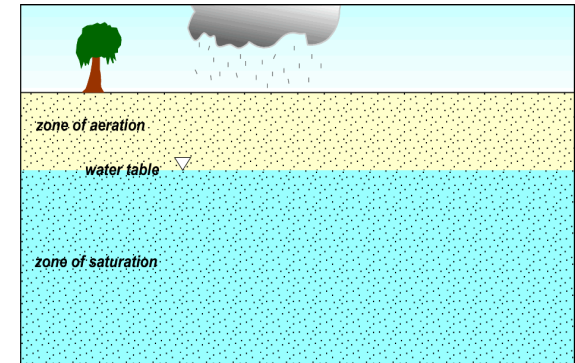
Effects of Deforestation

- **Decrease in rainfall :** In the absence of forest, rainfall declines considerably because forest bring rains due to high rate of transpiration. It maintains humidity in atmosphere
- **Loss of fertile land:** Less rainfall results into loss of fertile land owing to less natural vegetation growth.
- **Effect on climate:** Deforestation induces global climate change. Climate becomes warmer due to lack of humidity in deforested areas, also pattern of rainfall changes



Effects of Deforestation

- **Lowering of Water table:** Lack of recharging of underground reservoir, results into lowering of water table
- **Economic Losses:** Deforestation will cause loss of industrial timber and non timber products
- **Loss of biodiversity:** Loss of flora and fauna result into loss of bio-diversity leading to disturbance in ecological balance world wide.
- **Environmental changes:** It will lead to increase in carbon dioxide concentration and other pollutants which results in Global warming.



Afforestation

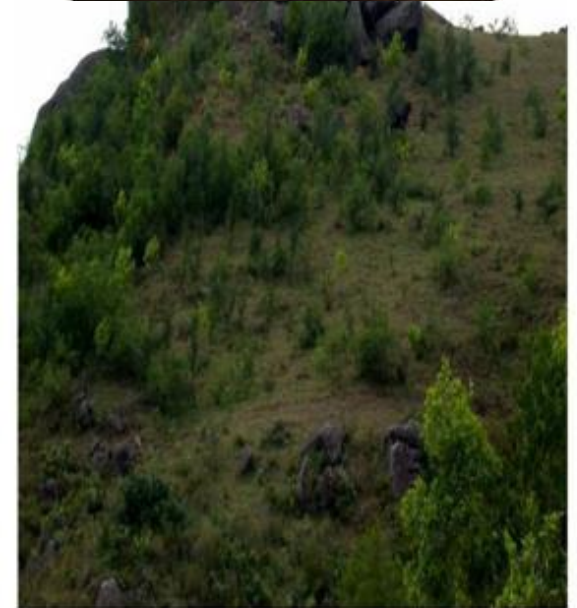


Afforestation

The conservation measure against the deforestation is afforestation. The development of forest by planting trees on waste land is called afforestation

The main objective of afforestation

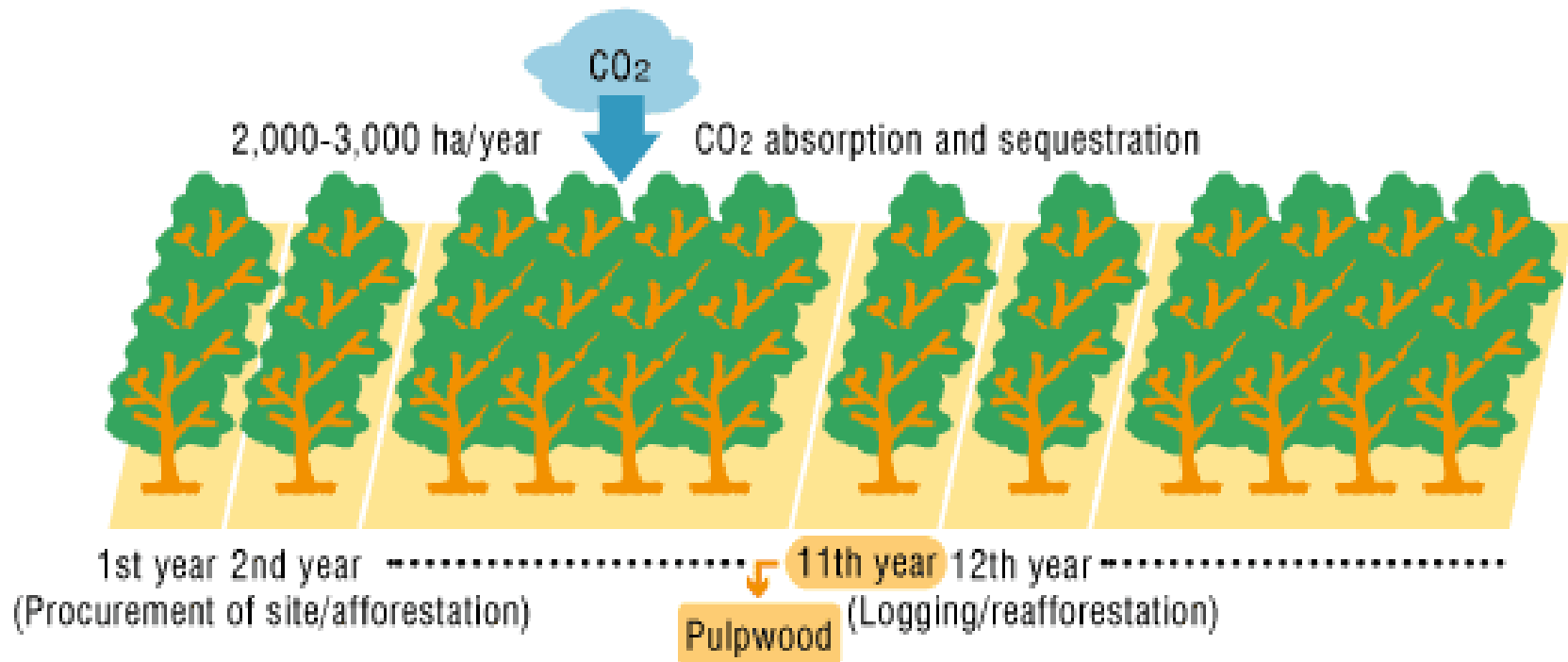
- To control the deforestation
- To prevent soil erosion
- To regulate rainfall and maintain temperature



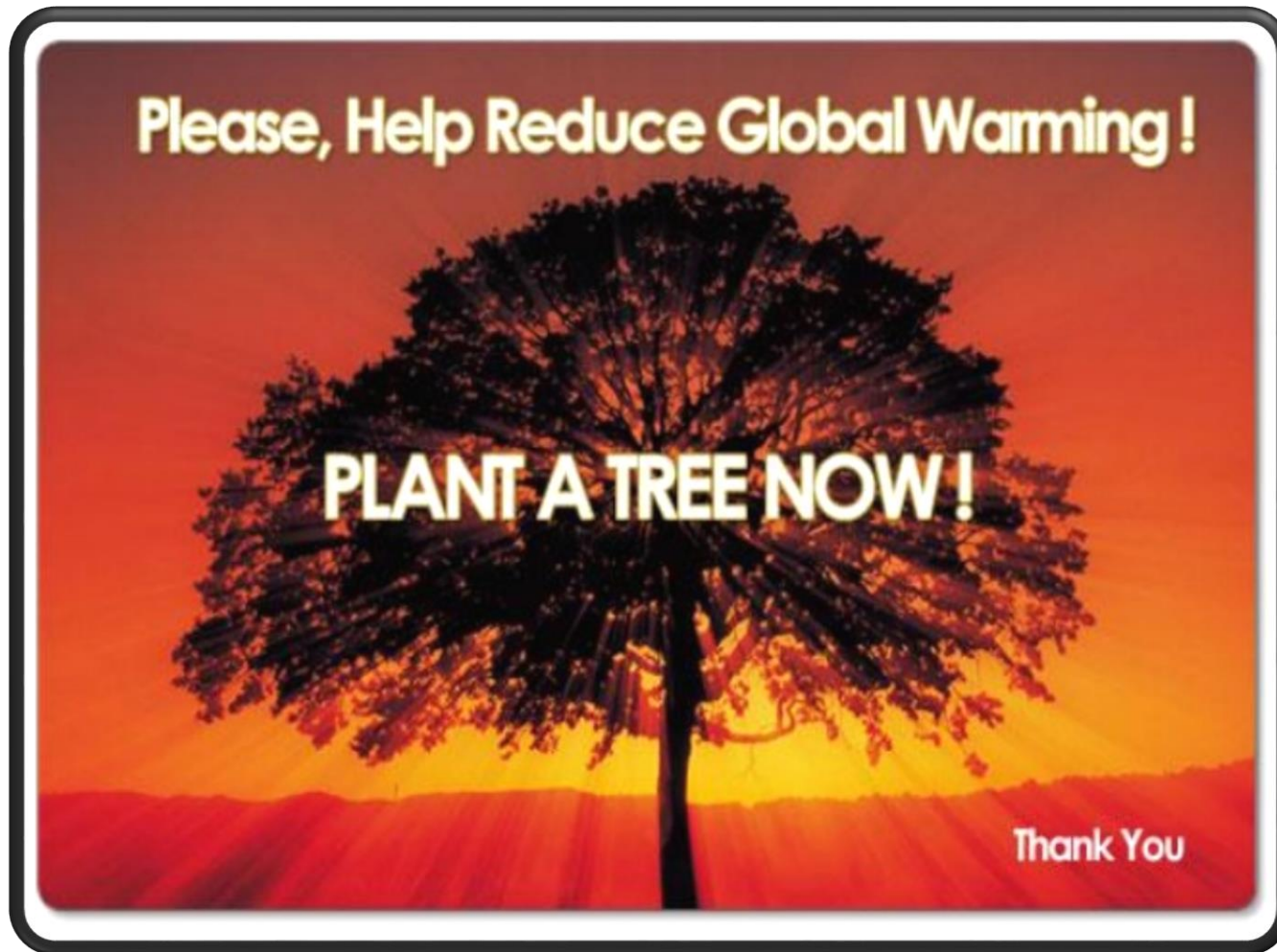
Corporate Afforestation Scheme

Afforestation

- To control atmospheric condition by keeping it clean
- To promote planned uses of wasteland
- To Protect forest ecosystem and to get benefits of forest products.



Afforestation



Forest Degradation in India

- At the beginning of 20th century about 30 % of land in India was covered with forests but by the end of 20th century the forest cover was reduced to 19.4%
- As a result of exploitation, the tropical forest cover in India, is now only reduced to coastal western Ghats and northern India
- We have a huge population size and a very low precipitate forest area 0.075 Ha per capita as compared to 0.64 ha/ capita of world forest area



Forest Degradation in India

- The National forest policy has recommended **33 %** forest area for plains and **67 %** for hills
- The deforestation rate per unit population in India is lowest among the major tropical countries
- For effective forest management of country we have to take the confidence of tribal who have been living in forest.



Dams and their effects on Forest and Tribal People

- When a dam is constructed across any river a huge artificial lake is developed in the catchment area of that dam. It is also known as back waters. The backwaters covering a large surface area. Create a lot of ill-effects on the living environment. They are as follows:
- It creates the loss of forest which are submerged under the back waters of the dam.



Dams and their effects on Forest and Tribal People

- It creates danger to the habitat of the wild life. The wild life are forced to migrate.
- It also affects the land under cultivation, in the catchment area as the crops get submerged under water.
- The roads, already in existence are put under water after the construction of dam. So the road network is damaged



The Story of Kani Tribe: Compensating Indigenous Knowledge

- In December 1987, a team of scientists was on a botanical expedition to western Ghats in Kerala. They took with them a few members of Kani Tribe as their guides.
- The tribals showed the plant, Aarogyappacha as a source of fruit.



The Story of Kani Tribe: Compensating Indigenous Knowledge

- The scientists, who were from Tropical Botanic Garden and research Institute (TBGRI). Thiruvananthapuram, secured specimens of the plants and conducted investigations. They found anti-stress and other beneficial properties among the plant's active ingredients.
- Using Aarogyappacha, and three other medicinal plants, they formulated a drug and gave it the name jeevani.
- TBGRI gave the right to manufacture the drug to a private company, Arya Vaidya Pharmacy (AVP) for a license fee of Rs 1,000,000 and a royalty of two percent.



Summary

- In India forests are categorized into
 - Moist Tropical Forest
 - Dry Tropical forests
 - Coniferous Forests
 - Temperate Forests
 - Sub Alpine Forests
- The permanent destruction of forest is called deforestation
- Deforestation adversely affects and damages the environment



Summary

- Deforestation leads to soil erosion, decrease in rainfall, loss of fertile land, loss of biodiversity, lowering of water table which ultimately leads to global warming
- The development of forest by planting trees on waste land is called afforestation
- Afforestation prevents soil erosion and regulates rainfall and maintains temperature
- Building of dams creates lots of ill effects on living environment.

