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FACULTY OF ENGINEERING AND
TECHNOLOGY

Lecture- 4

Forest Resources- Part 1



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Forest Resources

Forest is a woodland area dominated by trees.

Nearly 31% of the total earth's land area is covered with forest, that accounts approximately 4 billion hectares.

Forests are the most diverse and richest ecosystem on the planet earth.

They are homes to numerous valuable and commercial products and provide innumerable ecological services.



Uses of forest resources

Direct benefits or commercial uses

Forests offer direct benefits i.e., provide several products which are commercially important such as:

- Fuel wood- wood extracted from forest used for cooking and heating purposes
- Medicinal plants- several plants and trees possess medicinal value and are used for treating health ailments.
- Timber- several tree species are exploited for making furniture, etc.
- Food and fodder- forest vegetation are major source of nutrition in form of food and fodder for humans and livestock.
- Fibre- Number of plants as well as insects dwelling in forest provide fibre which are used for making clothes and other products such as jute ropes.
- Gums, rubber, papers, dyes, etc.- trees provide several other commercial products which are used in day to day life.

Uses of Forest Resources

Indirect benefits or ecological services

Forests provide ecological services that are considered as indirect benefits:

- Habitat for large number of wildlife
- Homes to tribal people
- Conserve water and regulate hydrological cycle
- Regulate level of oxygen and carbon dioxide
- Improve soil quality
- Prevent soil erosion, flooding, etc.
- Prevent air and noise pollution

Forests provide important environmental services & irreplaceable economic opportunities

Sinks of carbon dioxide

The world's forests absorb and store carbon in both above and below ground biomass



Habitats for biodiversity conservation

The world's forest area primarily designated for biodiversity and forest within protected areas have increased since 1990



Providers of important environmental services

Forests managed for clean water supply, resilience against disasters, recreation, cultural and spiritual activities have increased since 1990



Sustaining livelihood and economic opportunities

Forests supply the world's population with wood and non-wood forest products. In low-income countries woodfuel is still the most important wood product



Over-exploitation of forest resources

Forests since ever have been over-exploited for its resources.

Humans depends heavily on forest resources for their need of food, clothes, shelter, etc.

The over-exploitation of forest leads to:

- shortages in the supply of industrial wood;
- deforestation
- enhanced soil erosion and floods;
- shortages of fuel wood;
- expansion of extent of deserts;
- reduction of biodiversity;
- increased incidence of catastrophic events; and
- exacerbated condition of environmental pollution, global warming and climate change.

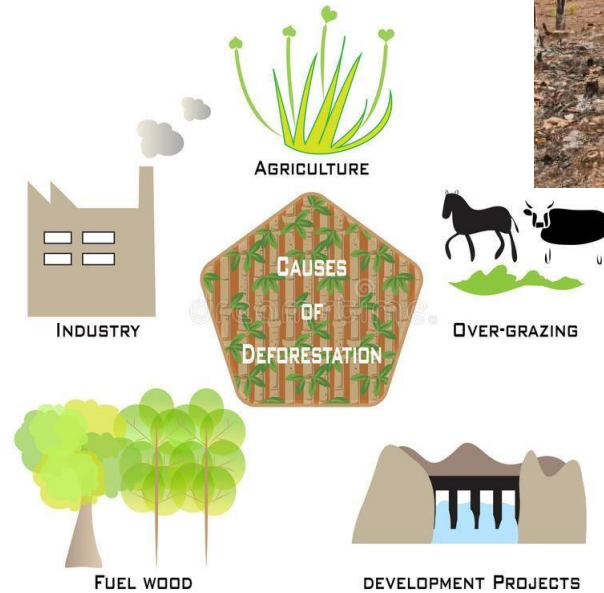


Deforestation

Deforestation is the permanent removal of trees to make place for non-forest use.

Major causes of deforestation

- Human population growth and resettlement
- Agricultural activities (shifting cultivation)
- Grazing and ranching
- Timber exploitation
- Mining and construction activities
- Extraction of other commercial products
- Natural forest fires
- Incidence of pests and pathogen attack



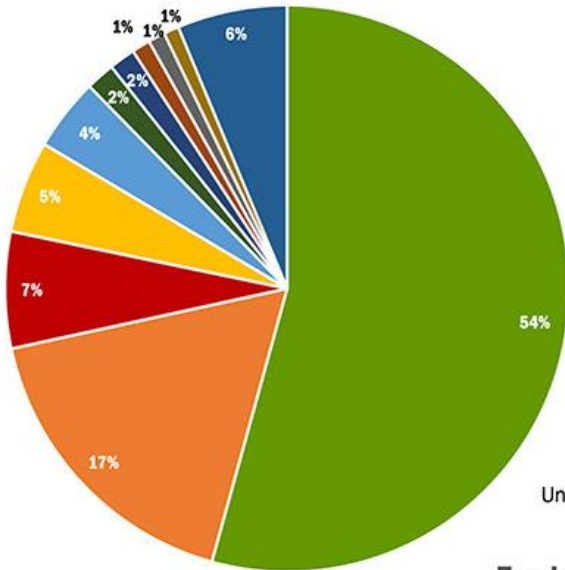
Timber exploitation



Forest fires

STATE OF THE WORLD'S LARGEST TROPICAL RAINFORESTS IN 2020

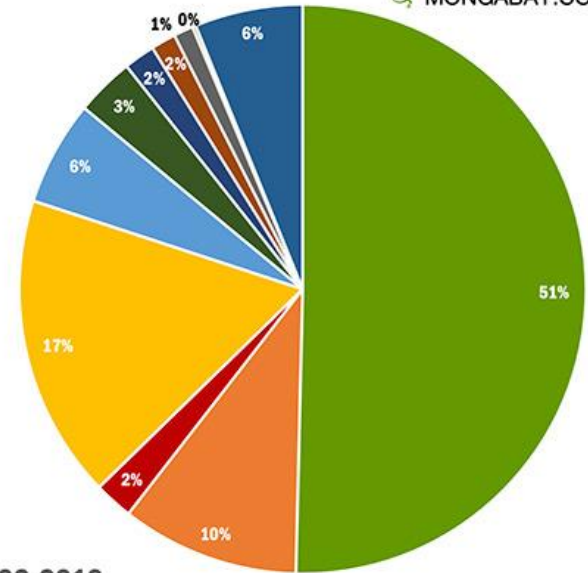
Share of primary tropical forest cover in 2020



	2020 extent	2002-19 loss	% loss of 2001 cover
Amazon	526.2	30.5	5.5%
Congo	167.6	6.1	3.5%
Australasia	64.4	1.3	2.0%
Sundaland	51.0	10.4	17.0%
Indo-Burma	40.1	3.6	8.2%
Mesoamerica	16.0	2.0	11.2%
Wallacea	14.6	1.1	6.9%
West Africa	10.2	0.9	7.7%
Atlantic forest	9.3	0.7	6.7%
Choco	8.4	0.1	1.4%
Rest of the Tropics	61.2	3.7	5.7%

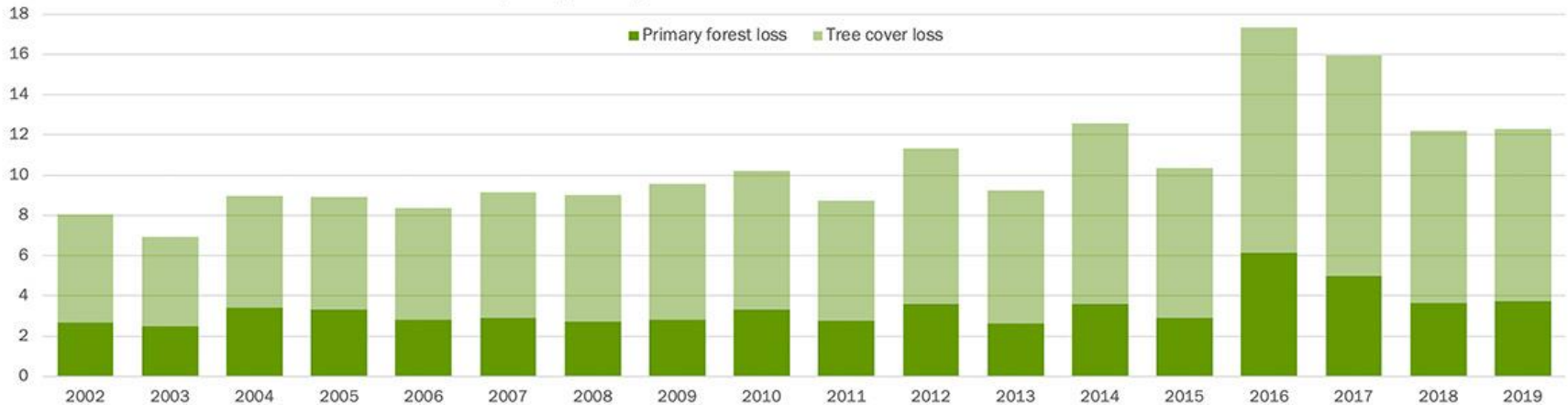
Units: million hectares | Data source: Hansen / WRI 2020

Share of primary tropical forest loss 2002-2019



MONGABAY.COM

Tropical primary forest loss and tree cover loss 2002-2019



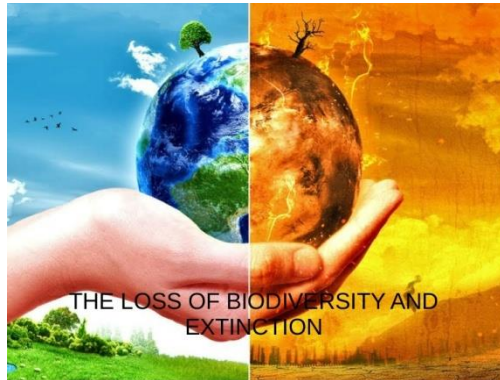
Source: <https://rainforests.mongabay.com/deforestation/>

Effects of deforestation

- Soil erosion
- Reduced precipitation
- Expansion of deserts
- Loss of fertile soil
- Habitat destruction
- Loss of biodiversity due to increased risk of extinction
- Incur economic losses
- Increase environmental pollution and risk to human health
- Exacerbate process of climate change



Soil erosion

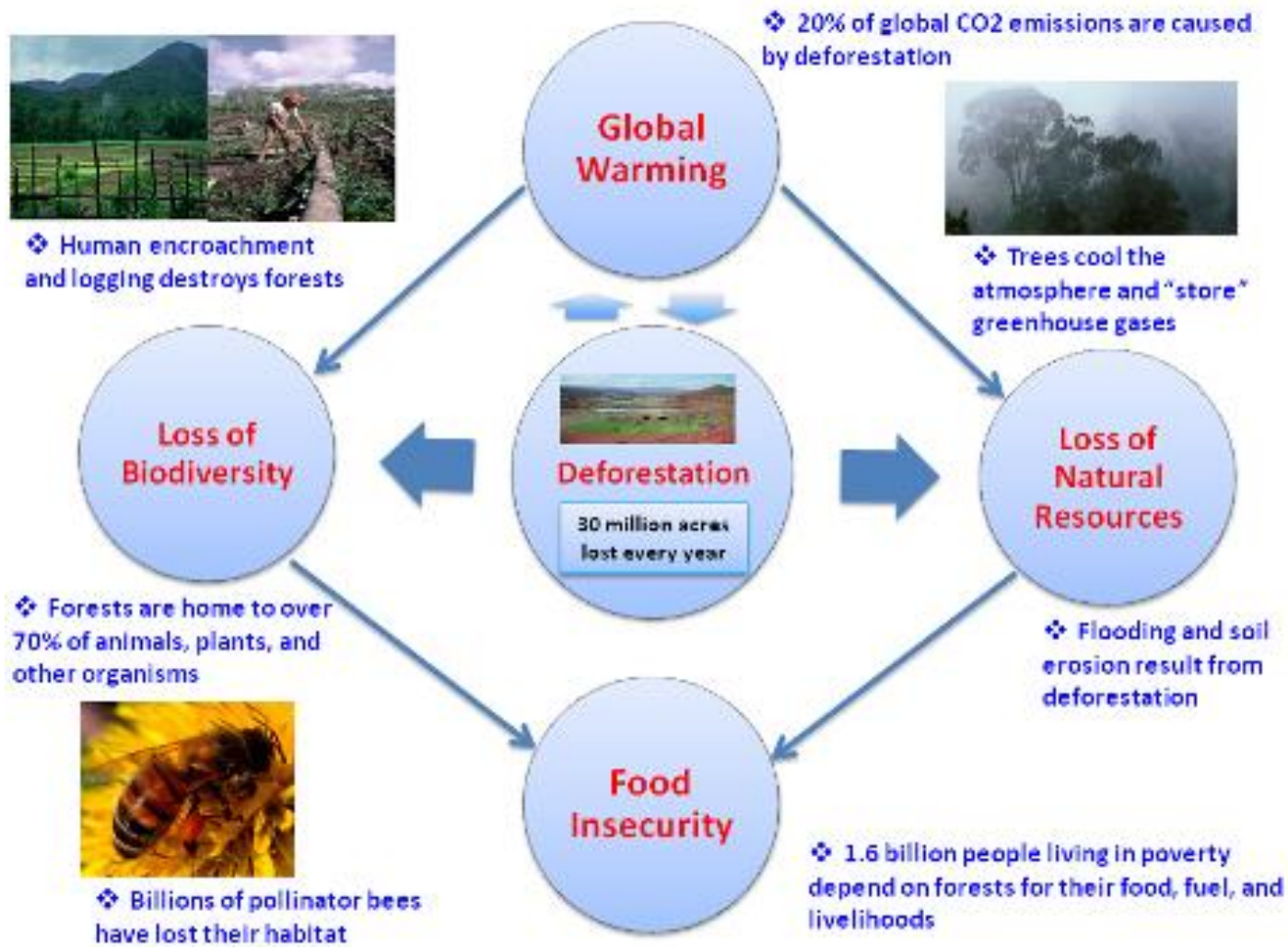


Desertification



Loss of biodiversity





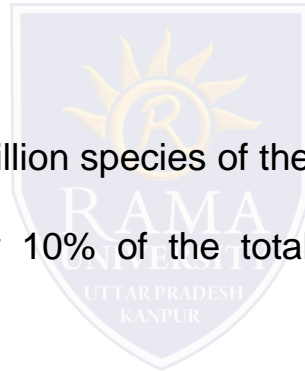
Deforestation- Case study

The Amazon rainforest

- It is one of the largest tropical rainforests on the globe, known as lungs of the planet.
- The Amazon rainforest stretches across 5.5 million square kilometers.
- Amazon rainforest is a home to three million species of the animals and plants constituting nearly 10% of the total known species living on earth
- Amazon rainforest is threatened by rapid and unsustainable rates of deforestation that may cause extinction of biodiversity living therein.
- During the last 40 year, 20% of the Amazon rainforest has been deforested.



Amazon rainforest



Chipko movement

Chipko movement or **Chipko Andolan** was a non-violent social agitation started in Uttarakhand, India in 1973 by villagers, particularly women.

The word "*Chipko*" means "*to hug*". To protect trees from falling, villagers embraced trees to impede the loggers.

It was a forest conservation movement that was aimed to **slow down the rapid deforestation**.

This movement was led by a Gandhian activist, **Shri. Sunderlal Bahuguna**, who gave proper direction to the movement.

He used the slogan "**Economy is the permanent economy**".

