
"Save Thy Forest, Save Thy Trees, For These
Holdeth Thou Pollution! "
-Mother Nature

WHAT ARE THE LIKELY IMPACTS OF CLIMATE CHANGE ON FORESTS OF INDIA. HOW THEY ARE MORE VULNERABLE

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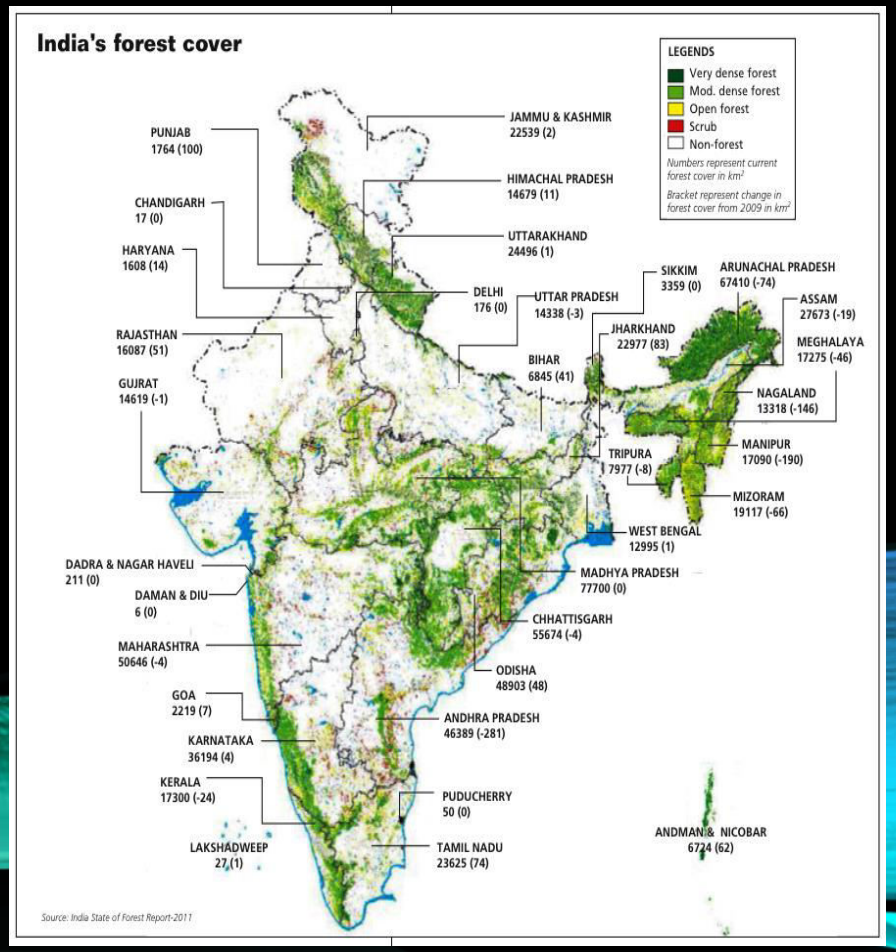
STATUS OF INDIAN FORESTS

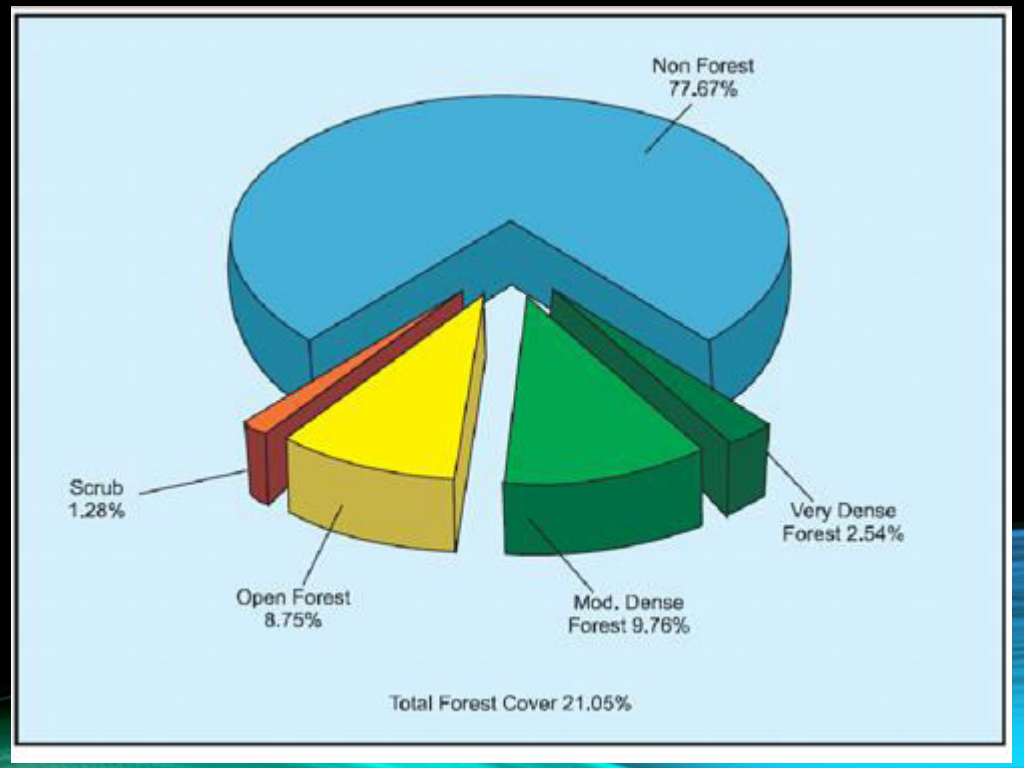
Based on Status of Forest Report 2015

- Total forest cover in India: 7,01,673 sq. km (increase of 3775 sq. km)
- Total forest cover as percentage of geographical area: 21.34 per cent
- Total tree cover in India: 92,572 sq. km (increase of 1306 sq. km)
- Total tree cover as percentage of geographical area : 2.82 per cent
- Mangrove cover in India is 4740 km² which is 0.14 % of the country's geographical area



STATUS OF INDIAN FOREST CONT….

- Out of the total forest cover, the maximum share is of Moderate Dense Forests, followed by Open Forests. The very dense forests in India are in just around 2.5%
- Hill regions have high forest cover, which is 39.99 %
- The total carbon stock in the country's forest is around 7, 044 million tonnes (Increase of 103 million tonnes CO2 equivalent)



VULNERABILITY OF INDIAN FORESTS

- SOCIALLY VULNERABLE
- TECHNOLOGICAL VULNERABILITY
- DEMOGRAPHIC VULNERABILITY
- GEOGRAPHIC VULNERABILITY
- BIOLOGICAL VULNERABILITY

INDIAN FORESTS ARE MORE VULNERABLE TO CLIMATE CHANGE COMPARED TO OTHER COUNTRIES

1. High level of endemic and unique species
2. A country with highest cattle population
3. Large population of Forest dependent communities depending upon forest produce for livelihood
4. Increasing population and pressure of Urbanization
5. Pressure of development as most resources are underneath the forest cover,
6. Higher levels of fragmentation due to linear projects
7. Critical mangrove cover vulnerable to sea level rise and natural disasters like Tsunami

GEOGRAPHICAL AND BIOLOGICAL VULNERABILITY

- India's forest is very diverse encompassing the high altitude Himalayan forest in north, dry and thorny forest in west, Dense tropical rain forest in southern peninsular area and eastern India. It also consists of 7 percent of mangrove forest in the world along the low laying coast line and island territories.
- India is part of four biodiversity hotspots, and the forest is the very basis of these biodiversity rich areas in India.
- Being tropical country risk of forest fires always there

BEING TROPICAL COUNTRY RISK OF FOREST FIRES ALWAYS THERE

- India is tropical country with tropic of cancer passing through the centre of its territory.
- Being a tropical country Indian forests are vulnerable to forest fires, climate change and global temperature rise will lead to increase in instances of forest fires.
- The recent increased instances of forest fires in Jammu and Kashmir and Uttarakhand shows clear link between climate change and forest fires

A COUNTRY WITH HIGHEST CATTLE POPULATION

- India has the largest cattle inventory in the world almost 31% according to USDA estimates
- Open grazing in the forest has adverse impact on growing stock as well as regeneration capacity of forest when there is over grazing due to more livestock.
- ICFRE (2011) estimates suggest that India's forest support 270 million cattle for grazing against its carrying capacity of 30 million.

LARGE POPULATION OF FOREST DEPENDENT COMMUNITIES DEPENDING UPON FOREST PRODUCE FOR LIVELIHOOD

- This is opportunity as well as burden for forest conservation.
- Traditionally communities are involved in plantation, forest protection, fire extinguishing
- But they also depend upon forest for fuel wood, fodder and livelihood
- Some non forest dwelling communities are also encroaching forest land under the guise of bona fide forest dwelling communities
- Shifting cultivation and its reduced cycle time is also measure cause of forest degradation and reduced yield due to climate change will only exacerbate the situation

INCREASING POPULATION AND PRESSURE OF URBANIZATION

- India is rapidly undergoing the process of urbanization.
- Urbanization has put forth pressure on forest land, resources like wood, ores and coal.
- The forest areas near urban centers where land values have skyrocketed are systematically encroached by mafias
- The increasing urbanization has also lead to increased tourism in forest areas thereby increase in degradation of forest

PRESSURE OF DEVELOPMENT

- Most resources like iron ore, bauxite, coal are located under forest areas.
- Green development emphasizing on clean energy like wind energy, hydroelectric energy are ultimately leading to forest land diversions.
- Development is leading to construction of communication lines like road and rails are not only diverting forest land but also fragmenting it. Such fragmented forest is detrimental for biodiversity conservation.

CRITICAL MANGROVE COVER VULNERABLE TO SEA LEVEL RISE AND NATURAL DISASTERS LIKE TSUNAMI

- India has a very good cover of mangrove forest along its coast line and island territories.
- These mangroves are critical for conservation of coastal ecosystem.
- Rising sea level due to climate change makes these mangroves vulnerable to submergence.
- Also the climate change leading to extreme events like cyclones and tsunamis are damaging the mangrove forests.
- Extreme events like floods have also caused the submergence of smaller islands near river deltas like Ganga.

ARE NOT OTHER DEVELOPED COUNTRIES THE VICTIM TO THE SAME ISSUES

YES

- BUT HOW DO THEY MANAGE??

- WHY IS THE IMPACT NOT SO PROLIFERANT IN OTHCOUNTRS??

THE JAPAN EXAMPLE

- Sumitomo Forestry- Consultancy
- The System gained forest resources information with high accuracy such as tree species, tree heights, the number of standing trees, and its density by using an aerial survey technique that combines aerial photographs and laser surveying

THE US EXAMPLE

- TECHNOLOGY
- REVAMPED PLANS
- COMMERCIAL Vis a vis ECOLOGICAL USAGE
- FIRE FIGHTING- CAPACITY BUILDING
- PROFESSIONALISM

CLIMATE CHANGE IMPACT ON FORESTS

The Third Assessment Report of IPCC:

- Forest ecosystems could be seriously impacted by future climate change. Even with global warming of 1-2°C
- Most ecosystems and landscapes will be impacted through changes in species composition, productivity and biodiversity
- Two studies in Himachal Pradesh & Western Ghats indicated moderate to large-scale shifts in vegetation types, with implications for forest dieback and biodiversity.

CLIMATE CHANGE LIKELY IMPACTS

- Increased incidence of drought & fire
- Migration of species towards higher latitudes & elevations
- Decrease in area under socio-economic important species like Deodar, Oak, Sal etc.
- Increasing spread of invasive species
- Flora & fauna falling out of synchrony
- Adverse impact on biodiversity
- Adverse impact on forest ecosystem services
- Biodiversity is likely to be impacted under the projected climate scenarios due to the changes or shifts in forest or vegetation types (in 57 to 60% of forested grids), forest dieback during the transient phase, and different species responding differently to climate changes even when there is no change in forest type
- Climate change will be an additional pressure and will exacerbate the declines in biodiversity resulting from socio-economic pressures

THANK YOU