FOREST FIRES - GS III MAINS

Q. Forest fires incidents have increased due to global warming and is a crisis and needs immediate action.

News: *Heat, aridity, clear skies: why forests are already ablaze in the Nilgiris*

What's in the news?

- For almost a week, forest fires have been raging in the Coonoor forest range in the Nilgiris in Tamil Nadu.

Key takeaways:

- The Indian Air Force joined the ongoing firefighting efforts of the state forest department, deploying an Mi-17 V5 helicopter to conduct multiple "Bambi Bucket" operations that dumped some 16,000 litres of water on the fires.

Bambi Bucket Operations:

- The Bambi Bucket, also called a helicopter bucket or a heli bucket, is a specialised container that is suspended by cable under a chopper, and which can be filled by lowering into a river or pond before being flown above a fire and discharged aerially by opening a valve at the bottom of the bucket.

Forest Fire:

- Forest fire is the uncontrolled fire that destroys large parts of the forest.
- They are a threat to the fauna and flora and destroy the biodiversity and the ecology of a region.
- About 21.40% of forest cover in India is prone to fires according to a 2019 report by the Forest Survey of India that demand urgent action.

Causes of Forest Fires:

Anthropogenic Causes:

1. Smoking:

- Smoking is the leading cause of fires and deaths globally.
- Habit of smoking while driving, walking or biking and then throwing away cigarette butts without completely extinguishing it lead to forest fires.

2. Campfires:

- During camping or outdoor activities people normally leave lit fires or combusting materials unattended to which ignite wildfires.

- It is a must for all lit fires and combusting materials to be totally extinguished after use to avoid wildfire disasters.

3. Fireworks:

- Fireworks are used by humans for various reasons such as festivals. However, their explosive nature can start wildfires.

4. Burning Debris:

- Wastes and trash are on several occasions burned to ashes as a way of reducing the accumulation of rubbish. What is left after burning the waste matter or trash is debris that burns slowly. This slowly burning debris can potentially set anything ablaze and start a wildfire because of the heat.

Natural Causes:

1. Lightning:

- A good number of wildfires are triggered by lightning. A lightning strike can produce a spark.
- Sometimes the lightning can strike power cables, trees, or rocks and any other thing and this can trigger a fire.

2. Volcanic Eruption:

- Hot magma in the earth's crust is usually expelled out as lava during a volcanic eruption.
- The hot lava then flows into nearby fields or lands to start wildfires.

3. Heat Patterns:

- Increased temperatures due to global warming are making the forests more vulnerable.
- Rising atmospheric temperatures and dryness (low humidity) make favourable circumstances for a fire to start.

Consequences of Forest Fires:

1. Loss of Ecosystems and Biodiversity:

- Forest fires destroy the habitats and the intricate relationships of diverse flora and fauna leading to loss of ecosystems and biodiversity.
- Wildfires damage the habitable and adaptable land for specific animal and plant species.
- Besides, wildfires can even lead to extinction for certain animals.
- Wildfires can be so severe that they decimate the habits and critical relationships of plants and animals causing loss of ecosystems.

2. Forest Degradation:

- Forest fires, especially that commonly happen in dry tropical forests, are a major cause of forest degradation.
- Almost every year, forest fires are witnessed across different forest regions which persistently reduce the quality of certain forest features like soil fertility, biodiversity, and ecosystems.

3. Air Pollution:

- Living plant matter purifies the atmospheric air we depend on for respiration.
- They achieve this by taking in carbon dioxide, greenhouse gases and air impurities and by producing oxygen. In addition, the huge clouds of smoke instigated by wildfires lead to massive air pollution.

4. Global Warming:

- When plant life is exterminated by fires, the quality of air we breathe declines and greenhouse gases increase in the atmosphere leading to climate change and global warming.
- Trees and vegetation when are burned, it means more greenhouse gases increases in the atmosphere, resulting in global warming

5. Destruction of Watersheds:

- Trees and vegetation cover acts as watershed protectors since approximately all the water comes from forest-derived water tables. Whenever they burn, the natural protection systems for water tables, streams, and rivers may be affected.

Measures to Control Forest Fire:

1. National Policy:

- A national policy is required to consolidate existing guidelines and to issue comprehensive guidelines which should be aligned with the climate change policies.
- The policy should also define the respective roles and responsibilities of the MoEFCC, state forest departments, and disaster agencies, and establish a mechanism for the provision of regular funding to the states.

2. Human Capital:

- Ground-based detection will continue to be essential along with the introduction of new remote sensing technologies.
- So, training should be provided to field officers, seasonal fire watchers and community volunteers involved in firefighting.

3. Coordination with other agencies:

- Stronger collaboration between the State Forest Departments (SFDs), the disaster management authorities and research entities would enable states to innovate new science-based management approaches for preventing fires and rehabilitating fire-affected areas.

4. Technology:

- Systems for early warning and fire danger need to be developed.
- Fire alert systems can also be improved by integrating ground-based detection with the satellite-based alert systems.

5. Community Engagement:

- Sensitisation of communities should be done to ensure that fire is used responsibly in a way that promotes forest health, while seeking to avoid damaging and out-of-control fires.
- Provision of training should extend beyond state-managed forests to community institutions in regions such as the Northeast, where communities are responsible for managing most of the forest estate.

Indian Initiatives:

1. National Master Plan:

- The Ministry of Environment, Forests, and Climate Change has prepared a National Master Plan for Forest Fire Control.
- The Forest Survey of India (FSI) monitors the incidence of wildfires.
- This plan proposes to introduce a well-coordinated and integrated fire management program that includes the following components:

2. Awareness and Education:

- Prevention of human-caused fires through education and environmental modification.
    - It will include silvicultural activities, engineering works, people participation, and education and enforcement.
- It is proposed that more emphasis be given to people's participation through Joint Forest Fire Management for fire prevention.
- Prompt detection of fires through a well-coordinated network of observation points, efficient ground patrolling, and communication networks.

3. Other Measures:

- Remote sensing technology is to be given due importance in fire detection.
- For successful fire management and administration, a National Fire Danger Rating System (NFDRS) and Fire Forecasting System are to be developed in the country.
- Fast initial attack measures and vigorous follow-up action.
- Introducing a forest fuel modification system at strategic points.
- Ensuring the availability of Fire fighting resources.

Forest fires incidents have increased due to global warming. Destruction of forests is a crisis and needs immediate action. Special emphasis should be given to research, training, and development.