

Bushfires of Australia

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Source: *The Hindu*

Manifest pedagogy: Bushfires are becoming more deadlier in recent times. Climate change induced by human activities is the cause for greater instances of forest fires. The topic especially the ways of tackling it could be asked in mains.

In news: Australia is currently engulfed with smoke due to bushfires.

Placing it in syllabus: Natural disasters

Dimensions:

- What is bushfires/forest fire?
- Causes for bushfires
- Climate change and bushfires
- Ways to tackle it

Content:

What is bushfires/forest fire?

- A forest fire/ bushfire is an **unclosed freely spreading combustion**, which consumes the natural fuels of a forest that consist of duff, grass, weeds, brush and trees.
- It is a **natural disaster** and poses a threat to the forest wealth, disturbs the biodiversity and ecology of a region.
- **Natural fires** have been a disturbance of several ecosystems throughout evolution thus plants have adapted to this regime.
- Though **man-made fires** have also coexisted in equilibrium with ecosystems for centuries, the unmanaged fire caused by stakeholders, has led to **adverse consequences for the diversity and structure of forests.**

Incidents of forest fire in recent times:

- El-Nino events and extensive forest fires of Australia in 2010
- Forest fires of Uttarakhand and Himachal Pradesh in 2016
- Forest fires of Western Ghats 2015 and 2017
- California forest fire of 2018
- Scandinavian forest fire in summers of 2018
- Amazon forest fire of 2019
- Australian bushfires, 2019-2020

Australian bushfires:

- The wildfires that Australia is experiencing are a **result of man-induced global warming.**
- **More than 5.25 million hectares (13 million acres) of land has been burnt** (more than twice the area that burned in the Amazon forest fire of August 2019).
- Australia saw the hottest and driest season in 2019 with the temperature reaching almost 50 degrees celsius in December.
- According to reports over 8,000 **koalas, which is approximately 30 percent of the total population** in mid-North Coast region **have been lost to fire.**
- Over 480 million birds, animals and reptiles have already been lost.

Causes for bushfires:

Natural Causes:

- Lightning which set trees on fire
- High atmospheric temperatures and dryness (low humidity)
- In the dry season, friction leading to sparks by rolling stones in the mountainous areas may lead to forest fires
- In bamboo areas, forest fires may occur by the rubbing together of clumps of dry bamboo.
- Volcanic eruptions
- The presence of El Nino conditions affecting the monsoon

movements

Man-made causes:

- Practice of shifting cultivation
- The use of fires by villagers to ward off wild animals
- Forest fires are started by smugglers and poachers to hide the stumps of illicit felling.
- Gatherers of various forest products start small fires to obtain good grazing grass as well as to facilitate gathering of minor forest produce like flowers of *Madhuca indica*.
- Accidentally discarded cigarette butts
- Stubble burning – when these fires are not put out completely, it may spread to the adjoining forest areas.

Climate change and bushfires:

Bushfires are exacerbated by the effects of global warming. The **Climate Council**, an independent, community-funded climate organization, suggests that **drought conditions and record-breaking temperatures** have contributed to the fires' unprecedented scale and intensity.

Longer bushfire seasons, drought, dried fuels and soils and record-breaking heat increases the risk of bushfires.

Australia experienced its hottest year on record in 2019, climbing 1.5 degrees Celsius higher than the average. These rising temperatures increase the risk of bushfire and Australia is experiencing a catastrophic fire danger for the first time ever.

Bushfires release carbon dioxide, a greenhouse gas, into the atmosphere which is exceptionally good at trapping heat. In just three months, **Australia's fires are estimated to have released 350 million metric tons of carbon dioxide**. Experts opined that a century or more will be needed to absorb the carbon dioxide released.

The **main climate driver behind the heat** has been a positive **Indian Ocean Dipole (IOD)** – an event where sea surface temperatures are warmer in the western half of the ocean, cooler in the east. The difference between the two temperatures is currently the strongest in 60 years.

As a result, there has been **higher-than-average rainfall and floods in eastern Africa and droughts in south-east Asia and Australia.**



In addition to this, the bushfires in Australia are so big that they are generating their own weather, in the form of **giant thunderstorms** that might start more fires.



Pyro-cumulonimbus clouds have developed to altitudes over 16km and these fire-induced storms can spread fires through lightning and generation of severe wind outflows according to experts.

Ways to tackle it:

- By creating **fire breaks** by clearing a section of trees around a town area.
- Removing the fuel of a bushfire from the town area.
- **Growing trees that are not so flammable.**
- Ensure building codes and laws to make houses more fire resistant.
- Ensure a good town emergency plan.
- Ensure there is a **good local fire fighting force** that is well planned and prepared to fight any on coming fires.
- Create **watch towers** during bushfire seasons.
- **Track fires from satellites** in space



Strategies followed based on fire intensity are:

- Smaller fires are fought directly, by firefighters applying water to the flames, either from the ground or the air.
- Fire intensity less than 800 kilowatts per metre can be suppressed with hand tools with water support as a direct attack.
- More intense fires of up to 2000 kilowatts per metre can be suppressed directly by machines, tankers and water bombers as a direct attack.
- As the intensity increases indirect attack methods are employed which include the use of tracked machines to build wide fire breaks, water bombers and fire itself.
- As intensities exceed the suppressible limit, fire-fighting actions focus on the containment of fire flanks and protecting lives and property.

Another way to try and contain a fire is to deliberately burn sections of the fuel in its path, so that there's no flammable material left to fuel it.