



PLUTUS ACADEMY

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Severe cold wave conditions in North India

Context:

- There has been a significant amount of snowfall over the past few days in states such as Jammu and Kashmir, Himachal Pradesh and Uttarakhand under the influence of a Western Disturbance. For example, Srinagar recorded a low of minus 8.4 degrees Celsius, which was the coldest temperature recorded in the city in 30 years, according to IMD.
- Snow-clad western Himalayas have brought the minimum temperature down in most parts of northwest India due to the prevalence of dry north and northwesterly winds. For example, successive Western Disturbances have resulted in Delhi registering above-normal minimum temperatures.

What is a cold wave?

- The “wave” in cold waves is apparent in the upper-air flow (the jetstream), which is usually amplified into a strong ridge-trough pattern during a major cold outbreak.
- Cold waves affect much larger areas than blizzards, ice storms, and other winter hazards.

Formation of Cold Waves :

- The core requirement of a cold wave at the surface is a strong high pressure center that forms during winter in high latitudes.
- Cold polar or Arctic air masses are relatively shallow, extending one to several kilometers above the surface.

What is causing the dip in temperature?

- Snowfall occurs frequently in high altitude areas during winter. This snowfall occurred under the influence of a western disturbance.
- Snowfall in the western Himalayan range means cold, north-westerly winds blowing over Delhi from the direction of this high altitude area.
- In winters, whenever an active western disturbance passes through the snow-clad western Himalayan region, it leads to a dip in temperatures across northwest India.

Western Disturbance

- A Western Disturbance is an extra-tropical storm originating in the Mediterranean.
- It is an area of low pressure that brings sudden showers, snow and fog in northwest India.

- It also brings sudden showers and cloudy skies to these regions.
- When skies are cloudy, there is comparatively less solar radiation during day time, which lowers maximum temperatures.
- However, cloudy skies increase the minimum or night time temperature as they hinder radiation from earth to the atmosphere at night. Clear skies have the opposite effect.
- Moreover, under the influence of an active La Niña climate pattern, temperatures across the globe have been dipping.

Declaration of Cold Wave:

- **A cold wave** is declared when there's a significant drop in minimum or night time temperature.

- The India Meteorological Department (IMD) declares a cold wave in plain areas if the minimum temperature dips to 4 degrees Celsius for **two consecutive days**.
- A **severe cold wave** is when the minimum is 2 degrees Celsius or less.



India Meteorological Department (IMD):

- IMD was established in 1875.
- It is an agency of the Ministry of Earth Sciences of the Government of India.
- It is the principal agency responsible for
 - Meteorological observations,
 - Weather forecasting and
 - Seismology.

What damage can arise?

- The cold wave can negatively impact the safety of aviation operations.
- Fatal accidents can occur if people fail to adapt their driving to road conditions.
- Ice rain can cause ice fractures in trees and telephone wires.
- Exposure to extreme and especially unexpected colds can lead to hypothermia and frostbite, which can cause death and injury.

Deteriorating Delhi's air quality index **(AQI)**

Context:

- The Ministry of Earth Sciences' air quality monitor SAFAR has forecasted that the air quality index (AQI) would further slip into a very poor category due to calm winds and extremely low ventilation condition.

Key Statistics regarding Air Pollution:

- India accounts for two-thirds of the world's most polluted cities — 21 of the most polluted 30 cities; 14 of the highest 20; and 6 of the highest 10 — in the 2019 World Air Quality Report released by the pollution tracker IQAir and Greenpeace. The ranking is based on a comparison of PM2.5 levels.
- Globally some 9 million premature deaths a year are associated with air pollutants, such as fine particulate matter, known as PM 2.5. Regrettably, 14 of the world's 20 most polluted cities are in India.

Initiatives by the Government:

A. National Clean Air Programme:

- A long-term, time-bound, national-level strategy to tackle the increasing air pollution problem across the country in a comprehensive manner.
- A credible, transparent and accountable data collection and monitoring system that is available for timely swift action is to be ensured

B. The Central Pollution Control Board (CPCB):

- It is a statutory organisation under the Ministry of Environment, Forest and Climate Change (Mo.E.F.C).
- It was established in 1974 under the Water (Prevention and Control of pollution) Act, 1974.
- It is also entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.
- It Coordinates the activities of the State Pollution Control Boards by providing technical assistance and guidance and also resolves disputes among them.
- It is the apex organisation in the country in the field of pollution control.

C. LiDAR (Light Detection and Ranging):

- It is used to vertically monitor the air quality of Delhi-NCR
- It track the evolution of a pollutant over time
- It detects leakage of organic pollutants in storage facilities and industrial plants, such as oil refineries.

D. Climate & Clean Air Coalition:

- Unites governments, civil society and private sector, committed to improving air quality and protecting the climate in next few decades by reducing short-lived climate pollutants (SLCP) across sectors
- By the governments of Bangladesh, Canada, Ghana, Mexico, Sweden and the United States, along with the United Nations Environment Programme (UNEP)
- Objective: To address short-lived climate pollutants.
- Initial focus on: Methane, black carbon, and HFCs

E. National Air Quality Index (AQI):

- The AQI is an index for reporting daily air quality. It focuses on health effects one might experience within a few hours or days after breathing polluted air.
- The AQI is an index for reporting daily air quality. It tells how clean or polluted the air is.
- The higher the AQI value, the greater the level of air pollution and the greater the health concern.

Air Quality Index (AQI) is calculated for eight major air pollutants:

- Ground-level ozone,
- PM10,
- PM2.5,
- Carbon monoxide,
- Sulfur dioxide,
- Nitrogen dioxide,
- Ammonia,
- Lead,

Air Quality Index - Particulate Matter	
301 – 500	Hazardous
201 – 300	Very Unhealthy
151 – 200	Unhealthy
101 – 150	Unhealthy for Sensitive Groups
51 – 100	Moderate
0 – 50	Good

Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in India.

F. Centre-run System of Air Quality and Weather Forecasting and Research (SAFAR):

- The System of Air Quality and Weather Forecasting And Research (SAFAR) is a national initiative to measure the air quality of a metropolitan city, by measuring the overall pollution level and the location-specific air quality of the city.
- The objective is to provide Real-time air quality index on 24×7 basis with colour coding along with 72-hour advance weather forecast.

What is SAFAR?

- SAFAR stands for **S**ystem of **A**ir **Q**uality and **W**eather **F**orecasting **A**nd **R**esearch.
- It is a country-wide initiative with an objective to provide location-specific information about the air quality on a real-time basis.
- It was indigenously developed by Indian Institute of Tropical Meteorology, Pune.
- It is run by India Meteorological Department (IMD).
- It is currently operationalized in metros Delhi, Pune, Mumbai and Ahmedabad.

G. GreenCo Rating System:

- It has been acknowledged in India's Intended Nationally Determined Contribution (INDC) document.
- It is used as a proactive voluntary action of Indian industry / private sector towards combating climate change.
- It is developed by Confederation of Indian Industry (CII).

The Way Forward:

- There is a need to urgently confront air pollution and global warming and strengthen health systems.
- Spending on reducing air pollution and GHGs provides estimated health benefits of 1.4 to 2.5 times more than the cost of the actions.
- Improving access to public transport, raising regulations or pricing emissions on power plants and factories and developing new

technology alternatives to polluting industries – all of these measures lead to cleaner air (and lower carbon emissions).

SULTANPUR NATIONAL PARK

Context:

- Recently forest department has stepped its vigilance at Sultanpur National Park in Gurgaon district of Haryana after confirmed cases of bird flu reported from New Delhi.

Sultanpur National Park:

- The park is located in Gurgaon district of Haryana.
- This National Park is known as bird paradise for bird lover people.
- The park is famous for both migratory and resident birds.
- In the month of September these migratory birds start arriving in this park.
- This park was declared as a National Park in 1991.

Fauna:

- Mammal- Blackbugg, Nilgai, Hog Deer, Sambar, Leopard etc
- Birds- Siberian Crane, Great Flamingo etc

Second Impeachment of a US President

Context:

In an unprecedented move Trump has become the first president in the USA to be impeached twice. Once he was impeached in 2019 however he was acquitted. Now again in 2021 he was impeached because of the incitement of upsurge in Capitol Hill Violence.

Capitol Violence:

A rally was organised by the name of “ Save American Rally” where lots of Trump supporters gathered and where along with Trump many Republic Members gave the speech. Trump has used phrases like Take back over country, We will fight like hell And incited the mob to march to the capitol hill that culminated to the capitol hill violence. Mob marched there and to distort the election process and that time they seized and kept many parts of capitol hill under their supervision.

Background:

- According to the US constitution, the President can be removed for conviction of treason, bribery or other higher crimes or misdemeanor.
- Two presidents of the US had impeached earlier Andrew Johnson (1868) and Bill Clinton (1998).

2019 Impeachment:

- The House adopted two articles of impeachment against Trump abuse of power and obstruction of congress.
- It is alleged that Trump has solicited Foreign Interference in the 2020 US presidential election.
- The inquiry reported that Trump withheld military aid and an invitation to the white house to Ukrainian president Volodmyr Zelensky in order to influence Ukraine to announce an investigation into Trump’s political opponent .