Fossil Fuel Extraction and Global Warming

Why in news?

A new study highlights that the global fossil fuel production should decline by 3% per year until 2050 to keep global warming to below 1.5°C[Paris Agreement goal].

What are fossil fuels?

- **Coal, crude oil, and natural gas** are all considered fossil fuels.
- They were formed from the fossilized, buried remains of plants and animals that lived millions of years ago.
- Because of their origins, fossil fuels have a **high carbon content**.

Fossil fuels produce large quantities of carbon dioxide when burned. Carbon emissions trap heat in the atmosphere, leading to global warming and eventually to climate change.

What is the Paris climate goal?

- It aims to make efforts to hold the increase in the global average temperature to well below 2°C [an ambitious 1.5°C] above pre-industrial levels (1850-1900).
- As of now (2021), human activities have already caused global temperatures to rise by about 1°C above pre-industrial levels.
- Currently, countries' emissions targets are not in line with limiting global warming to under 1.5°C.

How is the current level of fossil fuel extraction?

- As of now, both planned and operational fossil fuel extraction projects are **not conducive to meeting the Paris Agreement targets**.
- Globally, production of fossil fuels needed to have peaked in 2020 and be on a steady decline of 3% every year until 2050.
- A substantial number of regions in the world have already reached their peak fossil fuel production.
- Any increase hereafter will have to be offset by a decline elsewhere, to stick to the tight carbon budget.

To achieve the targets, almost 60% of oil and gas reserves and 90% of coal must remain unextractedby 2050.

- Specifically, unextractable estimates for coal show less regional variation, although they are lowest in those regions that utilize most coal in the next 30 years.[Notably India, China and other parts of Asia.]

Greenpeace report published in early 2020

- In 2020, global cost of air pollution from fossil fuels was around $2.9 trillion per year, or $8 billion per day, which was 3.3% of the world's GDP.
- Of this, India is estimated to bear a cost of $150 billion from air pollution caused by fossil fuels.

IPCC warns that fossil fuel emissions must be halved within 11 years (from 2021) if global warming is to be limited to 1.5°C above pre-industrial levels.



Why are unextracted reserves important?

- A carbon budget is the cumulative amount of CO_2 that can be released in a time period keeping with the Paris goals.
- But this does not consider uncertainties around, say, climate-system feedbacks.
- So, to ensure more certainty of stabilising at this temperature, even more carbon needs to stay in the ground.
- In other words, there is much less room for fossil fuels to be extracted than previously estimated.

What does this call for?

- Bold national policies to entirely phase out fossil-fuel extraction.
- Stopping issuing fossil-fuel exploration permits.
- Move away from reliance on fossil fuels to renewables.

Source: Indian Express, BBC

Other harmful effects of fossil fuels

Land degradation

- Enormous toll on landscapes and ecosystems
- Even after extraction, the nutrient-leached land will never return to its earlier state
- Critical wildlife habitatends up fragmented and destroyed

Water pollution

- Acid runoff into water bodies
- Oil spills and leaks during extraction or transport
- Fracking and its toxic fluids contaminate drinking water
- Generate enormous volumes of wastewater in the process

Emission

- Emits harmful air pollutants long before they're burned
- Emits mercury, sulfur dioxide (contribute to acid rain), soot (particulate matter)
- Fossil fuel-powered automobiles - Main contributors of poisonous carbon monoxide and

nitrogen oxide, which produces smog (and respiratory illnesses)

Other effects

- Ocean acidification - Since the start of the Industrial Revolution (and coal-burning ways), the ocean has become 30% more acidic.

