

1. Study on Rising Temperature

Why in News?

- Recently, study published in Nature Communications, limiting global temperature rise to the UN-mandated Paris Agreement target of 2 degrees Celsius is probably insufficient to prevent an accelerated sea level rise over the next century.

Highlights

- The study suggests that if global temperatures rise above 1.8°C, the world could see an irreversible loss of the west Antarctic and Greenland ice sheets, leading to a rapid sea level rise.
- Scientists studying Antarctica's vast Thwaites Glacier (Doomsday Glacier) say warm water is seeping into its weak spots, worsening melting caused by rising temperatures.
- Using an underwater robot vehicle known as Ice fin, mooring data and sensors, they monitored the glacier's grounding line, where ice slides off the glacier and meets the ocean for the first time.
- The study highlights that reaching net-zero carbon emissions before 2060 is critical to avoid this catastrophe.
- By 2150, global sea level rise is estimated to increase by roughly 1.4, 0.5, and 0.2 metres under high, mid, and low-emission scenarios, respectively.
- As the Earth's temperature increases, ice caps and glaciers are melting at an accelerated rate. The melting of land-based ice, such as glaciers and ice caps, contributes to sea level rise as the water from melting ice flows into the ocean.
- The rise in temperature is primarily due to the increase in greenhouse gases in the atmosphere, primarily carbon dioxide, resulting from human activities such as the burning of fossil fuels and deforestation.
- The concentrations of three main greenhouse gases, carbon dioxide (CO₂), methane (CH₄) and Nitrous oxide (NO₂), were all at record highs in 2021.
- The emissions of methane, which is 25 times more potent than carbon dioxide in causing global warming, in fact, increased at the fastest pace ever.