Amazon Forest and Carbon Sink

Prelims: *Current events of national and international importance | Environment*

Why in News?

A study led by researchers at Brazil's National Institute for Space Research (INPE) revealed that the Amazon rainforest has officially transitioned from a net global carbon sink into a net carbon emitter.

Key Highlights

- **Observation Period -** 15 Years (2010–2024) utilizing top-down atmospheric sampling via aircraft.
- The Amazon released an average of 1.17 billion tonnes of CO2 (0.32 PgC) per year more than it absorbed during this period.
- **Primary Driver -** Forest fires alone released an estimated **1.47 billion tonnes of** *CO2* **annually**.
- The study noted that nearly 98% of these fires were directly human-induced (for land clearing/pasture), which were then amplified by extreme climatic droughts.
- **Human Action vs. Climate Factor -** The study divided the 15-year atmospheric data into distinct weather/activity profiles and found that even during mild climate years, high rates of deforestation and burning pushed net emissions up sharply.
- Thus, land-use change (human activity) is the primary driver, while droughts act as a force multiplier.
- **Peak Emission Year-** The year **2024** registered the highest annual net carbon emission during the 15-year period (~2.97 billion tonnes of CO2), corresponding with severe record droughts across the Amazon basin.
- **The "Flying Rivers" Threat -** Deforestation disrupts moisture recycling via transpiration, threatening the atmospheric moisture currents ("flying rivers") that supply essential rainfall across Southern and Central South America.
- **Global Climate Policy Implications-** Global carbon accounting models previously relied heavily on tropical forests as net sinks to absorb anthropogenic emissions.
- The shift of the Amazon to a net source underscores the inadequacy of reliance on nature-based offsets without achieving absolute zero-deforestation and rapid fossil fuel reductions.

Reference

The Hindu | Amazon is no longer a carbon sink