+918988885050
+918988886060
www.vajiraoinstitute.com
info@vajiraoinstitute.com

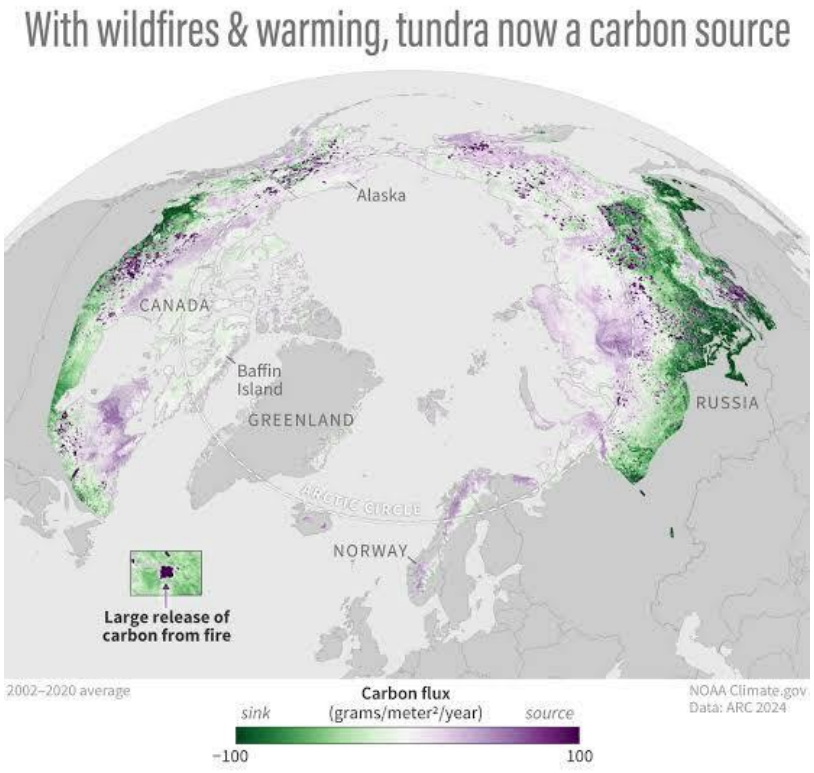
TODAY'S ANALYSIS

(21 December 2024)

TOPICS TO BE COVERED

- ARCTIC TUNDRA EMITTING MORE CARBON THAN SINKING
- HEALTHCARE IN INDIA:
  - HEALTHCARE FINANCING
  - HEALTHCARE INFRASTRUCTURE
  - HEALTHCARE WORKFORCE
  - HEALTHCARE INDICATORS
  - CHALLENGES IN HEALTHCARE SERVICES DELIVERY
  - FUTURE OF HEALTHCARE IN INDIA
  - RECOMMENDATIONS FOR STRENGTHENING HEALTHCARE SYSTEM
- MCQs

ARCTIC TUNDRA EMITTING MORE CARBON THAN SINKING



Key Points:

- The **Arctic tundra**, traditionally a **carbon sink**, is now releasing more carbon than it absorbs for the **first time in thousands of years**, as reported in the **2024 NOAA Arctic Report Card**.
- This shift is driven by two primary factors: **rising temperatures** and **increased wildfires**.

- The Arctic's role in regulating global carbon levels is being compromised, and this has profound implications for **global warming** and **climate change**.

KEY FINDINGS

- The **2024 Arctic Report Card** reveals that, for the **first time in millennia, the Arctic tundra is emitting more carbon than** it stores.
- If this trend continues, it could significantly **accelerate global climate change**, contributing to rising temperatures, extreme weather events, and melting ice.

HOW THE ARCTIC TUNDRA TRADITIONALLY STORE CARBON?

- **Normal Carbon Cycle:** In ecosystems, **carbon is absorbed by plants and animals, and when they die, decomposers like bacteria and fungi break down the organic matte**r, releasing carbon back into the atmosphere.
- **Unique Arctic Process:**
    - The **Arctic tundra** has **permafrost**—frozen soil that **remains below 0°C for at least two years**.
    - This frozen environment slows down decomposition, trapping carbon in the soil.

- It is estimated that Arctic soils store **over 1.6 trillion metric tonnes of carbon**, roughly **twice the amount of carbon currently in the atmosphere**, making it one of the largest natural carbon stores on Earth.

WHY THE ARCTIC TUNDRA IS EMITTING MORE CARBON?

A. Rising Temperatures

- **Arctic Warming:** The Arctic is warming at a rate **four times faster** than the global average, a trend that has been accelerating since the mid-20th century.
- **Record High Temperatures (2024):** In 2024, the Arctic experienced its second-warmest surface temperatures on record since 1900.
- **Thawing Permafrost:** The rising temperatures cause the **permafrost** to thaw, releasing **trapped carbon** in the form of **CO_2** and **methane (CH_4)**, a greenhouse gas that is much more effective at trapping heat than CO_2.
- **Microbial Activity:** Thawing permafrost activates **microbes** that were previously dormant, breaking down organic matter and releasing carbon into the atmosphere.
  - **Analogy:** Twila Moon, a lead editor of the report, compares thawing permafrost to a chicken in a freezer.

- **As long as the chicken stays frozen, microbes cannot decompose it**.
- Once thawed, the **microbes become active and start releasing carbon.**

B. Increased Wildfires

- **Frequency and Intensity:** The Arctic has seen an increase in both the **frequency** and **intensity** of wildfires in recent years.
- **Record Wildfires (2023-2024):** The **2023 wildfire season** was the worst on record for the Arctic, and **2024** was the second-largest year for wildfire emissions.
- **Impact of Wildfires:** Wildfires contribute directly to **carbon emissions**, and the heat from the fires also accelerates the thawing of permafrost, creating a vicious cycle.
- **Wildfire Emissions:** Wildfires release large amounts of **CO_2** and further promote thawing, making the situation worse.

C. Cumulative Effects (2001-2020)

- From **2001 to 2020**, the combined impact of rising temperatures and increased **wildfires caused the Arctic tundra to release more carbon than it absorbed.**
- This marks a **critical tipping point** in the Arctic's carbon dynamics.

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+918988886060
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info@vajiraoinstitute.com

GLOBAL IMPACT

- The Arctic tundra has long been a crucial **carbon sink** that helps regulate global temperatures. When it begins emitting more carbon, it creates a **feedback loop** that amplifies climate change.
    - **Feedback Loop:** As more carbon is released from thawing permafrost, the atmosphere warms, causing even more permafrost to thaw and release additional carbon, intensifying global warming.
- **Exacerbating Climate Change:** This feedback loop not only accelerates Arctic warming but also contributes to **global climate change**, as the increase in greenhouse gases traps more heat in the atmosphere.

WHAT HAPPENS NEXT?

Although the situation is alarming, there is still potential to reverse this trend:

1. Reducing Greenhouse Gas Emissions

- The most effective way to stop or reverse the thawing of permafrost is by **reducing global greenhouse gas emissions**.

- Lowering emissions from **fossil fuels** and other human activities will help slow the warming rate and allow the Arctic time to recover.
- **Expert Opinion:** Brendan Rogers from the **Woodwell Climate Research Center** emphasizes that reducing emissions would lower greenhouse gas levels released from permafrost, helping to mitigate the issue.

2. Global Carbon Projections for 2024

- According to a study by the **Global Carbon Project (November 2024)**:
  - **Total CO_2 Emissions:** 41.6 billion tonnes of CO_2 are expected in 2024, slightly higher than the 40.6 billion tonnes in 2023.
  - **Land-Use Emissions:** Deforestation and land-use changes are projected to contribute 4.2 billion tonnes of CO_2.

These rising emissions complicate efforts to stabilize the Arctic's carbon dynamics and mitigate the ongoing climate crisis.

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info@vajiraoinstitute.com

HEALTHCARE IN INDIA

HEALTHCARE FINANCING

Government Spending:

- The **Health Ministry has been allocated ₹90,958.63 crore in the 2024-2025 budget, an increase from ₹80,517.62 crore in the 2023-24 revised estimates.**
- **Government health expenditure in India increased to 1.9% of GDP in 2023-24,** up from 1.28% in 2018-19, as per the Economic Survey 2023-24.
- India spends about **1.3% to 1.9% of its GDP** on public healthcare, which is **far below** the global average.

BUDGETARY ALLOCATION

For the fiscal year 2024-25, the budget has increased the allocation for the **National Health Mission (NHM)** by approximately **Rs 4,000 crore**, raising the total from **Rs 31,550 crore** to **Rs 36,000 crore**. This increase aims to:

- **Strengthen primary and secondary healthcare**: NHM plays a pivotal role in providing accessible healthcare across rural and urban areas.

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+918988886060
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- **Reduce out-of-pocket expenditure**: By focusing on preventive and curative healthcare, the initiative aims to alleviate financial burdens on the public, particularly in underserved areas.

HEALTHCARE INFRASTRUCTURE

India's **healthcare infrastructure** is underdeveloped, especially in rural areas, contributing to poor healthcare outcomes.

- **Hospitals and Clinics**: Most hospitals and medical colleges are concentrated in **urban** centers. Rural areas have fewer hospitals, and many are inadequately equipped.
- **Rural-Urban Disparity**: Approximately **70% of India's population** lives in rural areas, but less than **40% of healthcare infrastructure** is in these regions. There are **fewer doctors** and **nurses** in rural areas, and most healthcare professionals are located in urban centers.

Challenges:

  - Inadequate sanitation, unreliable electricity, and **poor infrastructure** in remote areas lead to ineffective healthcare delivery.
  - Long waiting times for treatment at public hospitals in cities further exacerbates the healthcare burden.

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info@vajiraoinstitute.com

HEALTHCARE WORKFORCE

India faces a **severe shortage** of trained healthcare professionals:

- **Doctors and Nurses**: doctor-population ratio in the country is around **1:836 which is better than the WHO standard of 1:1000**. But The number of nurses is also insufficient to meet demand, particularly in rural areas.
- **Rural vs Urban Disparity**: Most healthcare professionals prefer to work in **urban areas**, leaving rural areas severely underserved. This results in a **brain drain**, where the most talented healthcare workers are drawn to cities and abroad.

HEALTHCARE INDICATORS

India has made progress in improving health outcomes, but challenges remain:

- **Life Expectancy: As of 2024, life expectancy in India is around 67.7 years according to data from the World Bank,** which indicates the average lifespan of a newborn child in **India is currently estimated at 67.7 years**.
- **Maternal Mortality Rate (MMR)**: India has **made significant progress in reducing its Maternal Mortality Ratio (MMR) from 384 in 2000 to 103 in 2020.** However, it still lags behind many other countries.

- **Infant Mortality Rate (IMR):** India's infant mortality rate (IMR) in **2024 is 25.799 deaths per 1,000 live births, a 3.08% decline from 2023.**

CHALLENGES IN HEALTHCARE SERVICES DELIVERY

Access and Inequality:

- The divide between **urban and rural healthcare** is the biggest challenge. **Rural areas** face long distances, high costs, and poor quality of care. **Economic inequality** also leads to a divide in access to healthcare between rich and poor.

Quality of Care:

- The **quality of care** in government hospitals is often subpar due to **lack of resources**, **overcrowding**, and outdated infrastructure. Meanwhile, private hospitals offer better quality but are often **out of reach** for lower-income groups.

Financial Barriers:

- **Out-of-pocket spending** remains high for the middle class, despite the government's efforts to provide health coverage. **Ayushman Bharat** and other schemes are improving coverage, but affordability remains an issue for **large sections** of the population.

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+918988886060
www.vajiraoinstitute.com
info@vajiraoinstitute.com

Workforce Issues:

- **Shortage of trained professionals** in rural areas is a critical barrier. The government has made efforts to address this with incentives and training programs, but it is still insufficient.

Infrastructure Gaps:

- Rural healthcare facilities lack essential equipment, and many remote areas do not have access to reliable health services. The COVID-19 pandemic has exposed the system's **weaknesses** in terms of preparedness and the **lack of effective healthcare infrastructure**.

FUTURE OF HEALTHCARE IN INDIA

Government Policies and Initiatives:

- **National Health Policy 2017** outlines a vision for **Universal Health Coverage (UHC)** and aims to strengthen the healthcare system. This policy encourages **preventive care**, improving health services, and increasing the **availability of healthcare workers**.
- **Ayushman Bharat 2.0**: The government plans to **expand insurance schemes** further and strengthen healthcare delivery at the **grassroots level**. There is a push for better infrastructure and **enhanced medical facilities**.

Telemedicine and Digital Health:

- The role of **telemedicine** and **digital health** is increasing, especially post-COVID-19. **E-health records**, **mobile apps**, and **teleconsultations** have made healthcare services more accessible, especially in **remote areas**.

Technological Advancements:

- **AI and Machine Learning** are transforming healthcare by helping doctors make accurate diagnoses and predicting disease outcomes.
- **Digital Health Infrastructure**: Investments in **electronic health records (EHR)**, telemedicine, and online consultations are helping to improve healthcare accessibility and reduce patient waiting times.

RECOMMENDATIONS FOR STRENGTHENING HEALTHCARE SYSTEM

- **Improving Access**: Expand healthcare facilities in rural areas and strengthen transportation infrastructure to make healthcare more accessible.
- **Enhancing Quality**: Standardize healthcare quality across both public and private sectors. Provide incentives for healthcare professionals to work in rural areas.

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- **Increasing Financing**: Increase government spending on healthcare, encourage public-private partnerships, and expand health insurance coverage.
- **Focus on Preventive Care**: Increase focus on prevention, including vaccination, anti-smoking campaigns, and lifestyle disease management.
- **Promote Digital Healthcare**: Invest in **telemedicine** and **mobile health** apps to improve access and healthcare delivery, especially in remote regions.

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MCQs

1. Consider the following statements and mark the correct ones:

   1. Permafrost is a soil which if frozen for atleast 5 years.

   2. The Arctic region is a vital source of stored carbon.

   (A) Only 1

   (B) Only 2

   (C) Both 1 & 2

   (D) Neither 1 nor 2

   Ans. (B)

2. Consider the following Assertion & Reasoning and mark the correct option:

   Assertion (A): The decomposition activity in the Arctic is slow

   Reasoning (R): There are sub zero temperatures in the Arctic.

   (A) Both A & R are true & R is the correct explanation of A

   (B) Both A & R are true & R is not the correct explanation of A

   (C) A is true & R is false

   (D) A is false & R is true.

   Ans. (A)

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3. Why has Arctic Tundra become carbon positive?

(A) Global Warming

(B) Frequent Wildfires

(C) Melting of permafrost

(D) All of the above reasons are responsible.

Ans. (D)

4. Consider the following statements and mark the correct ones:

1. GoI spends more than the global average on healthcare.

2. Government allocation for healthcare has increased for FY 25.

(A) Only 1

(B) Only 2

(C) Both 1 & 2

(D) Neither 1 nor 2

Ans. (b)

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5. Which of these factors can have a direct impact on Life Expectancy Rate?

1. Access to nutrition.
2. Education
3. Access to healthcare services.

(A) Only 1

(B) Only 3

(C) Only 2 & 3

(D) All of the above

Ans. (A)