One-day temperatures breach 2°C warming point

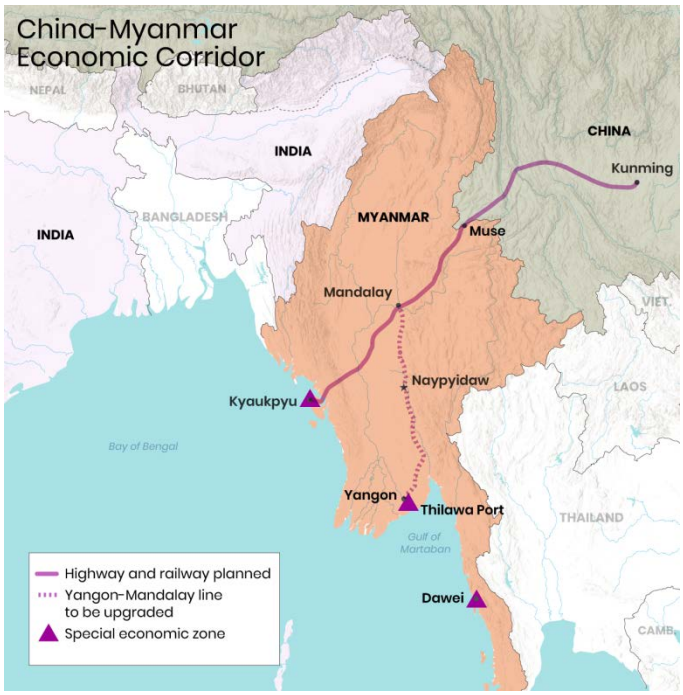
Context: On November 17, 2023, the world exceeded the 2 degrees Celsius warming threshold, as per preliminary analysis by the European Centre for Medium-Range Weather Forecasts (ECMWF).

- Specifically, **temperatures were 2.06°C warmer than the pre-industrial era** average for the period 1850-1900.
- November 17 recorded a global temperature 1.17°C above the 1991-2020 average, marking it as the warmest on record.
- The short-term breach of the 2°C threshold is **attributed to both the El Niño climate phenomenon and long-term human-caused climate forcing**.
- The year 2023 has witnessed several climate records, including 38 days with global average temperatures above 1.5°C by September 12 and the warmest June through August period ever recorded.
- **Global and North Atlantic sea surface temperatures broke records**, and the Amazon experienced a record-breaking drought, affecting river levels and local communities.
- The 2023 State of Climate Report warns that such trends signify a dangerous push toward planetary system instability.
- **Winter warming** in the Northern Hemisphere exceeds summer temperatures, with readings far above 2°C, according to Peter Carter, founder of the Climate Emergency Institute.
- Over the **last 12 months**, global temperatures have been the **warmest in the last 125,000 years,** reaching 1.32 degrees Celsius above the pre-industrial era.
- **Paris Agreement**
  - International agreement formed in Paris, France, **from November 30 to December 11, 2015.**
  - Involved representatives from **195 nations** discussing a global pact to address climate change.
  - **Aims of Paris Agreement:**
    - Keep global temperature rise **below 2 degrees Celsius** above pre-industrial levels.
    - Strive to limit temperature increase even further to 1.5 degrees Celsius.
    - **Enhance countries' capacity** to handle the impacts of climate change.
  - **Key Points about Paris Agreement:**
    - Considered a historic deal with **29 articles.**
    - Focus on limiting greenhouse gas emissions to levels absorbable by natural elements (trees, soil, oceans).
    - Emphasizes regular reviews of countries' emission-cutting contributions every five years.
    - Calls for developed nations to provide "climate finance" to assist poorer nations in adapting to climate change and adopting renewable energy.
  - **Structure and Characteristics:**
    - Adopts a 'bottom-up' structure, a departure from traditional 'top-down' international environmental law treaties.
    - Binding elements, such as reporting requirements, exist, while emissions targets for individual countries are non-binding.
  - **Relation to Previous Agreements:**
    - Falls under the broader framework of the United Nations Framework Convention on Climate Change (UNFCCC), established in 1992.
    - Contrasts with the Kyoto Protocol (1997), which had binding commitments for developed countries but not for developing ones.
    - Paris Agreement is the first comprehensive global climate agreement, legally binding for all parties, unlike the Kyoto Protocol.
- **Steps to tackle temperature increase**:
  - **National**:
    - **NAPCC (National Action Plan to Combat Climate Change):**
      - √ Released by India to address climate change threats.
      - √ Includes 8 sub-missions, such as the National Solar Mission and National Water Mission.
    - **India Cooling Action Plan:**
      - √ Focuses on an integrated approach to cooling and related areas.
      - √ Aims to reduce cooling demand to lower emissions and combat global warming.
  - **Global:**
    - **Paris Agreement:**
      - √ Aims to limit the global temperature rise to "well below" 2°C from pre-industrial levels.
      - √ Includes efforts to further restrict the increase to 1.5°C.
    - **UN SDGs (United Nations Sustainable Development Goals):**
      - √ Encompasses 17 broad goals for achieving sustainable development.
      - √ Goal 13 exclusively addresses the need to tackle climate change.
    - **Glasgow Pact:**
      - √ Adopted by 197 parties in 2021 during COP26 negotiations.
      - √ Emphasizes the critical importance of stronger action in the current decade for achieving the 1.5-degree target.
    - **Sharm-El-Sheikh Adaptation Agenda (at COP 27):**
      - √ Outlines 30 Adaptation Outcomes.

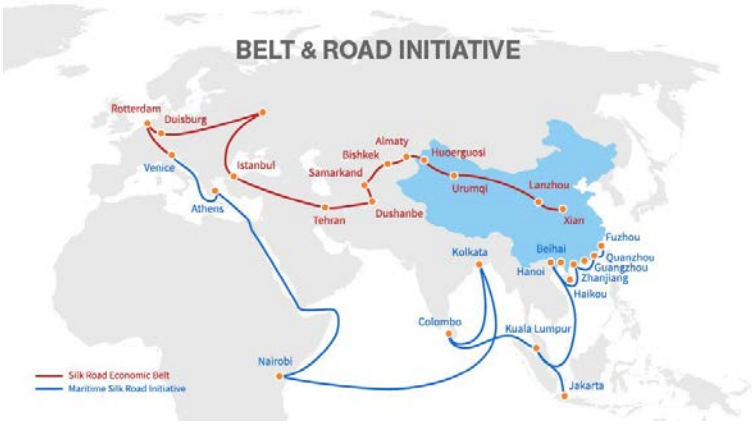
√ Aims to enhance resilience for 4 billion people in the most climate-vulnerable communities by 2030.

China-Myanmar Economic Corridor

Context: China is giving priority to extending the China-Myanmar Economic Corridor (CMEC) over BMIC Corridor, to include Sri Lanka.



- The China-Myanmar Economic Corridor (CMEC) connects **China's Yunnan Province to key locations in Myanmar, including Mandalay, Kyaukphyu SEZ, and Yangon**.
- This corridor strategically **provides China with an alternative route for trade and energy** transport, reducing its reliance on the Strait of Malacca.
- With the aim of offering a more secure and **shorter pathway to the Middle East and Africa**, CMEC involves significant infrastructure development, including the construction of roads, railways, ports, and industrial zones.
- Among the key projects within CMEC is the **development of the Kyaukphyu deep-sea port.**
- The economic impact of CMEC on Myanmar is substantial, promising infrastructure development, increased foreign investment, and job creation in the region.
- However, the initiative has raised concerns regarding debt **sustainability, potential environmental impact,** and the displacement of local communities.
- Moreover, the corridor passes through politically sensitive and conflict-prone areas in Myanmar, presenting challenges to its successful implementation and overall stability.
- **Belt and Road Initiative**
  - The Belt and Road Initiative (BRI) is a com**prehensive development strategy aimed at fostering global connectivity** and cooperation.
  - **Launched in 2013**, the BRI's objective is to establish linkages between Southeast Asia, Central Asia, the Gulf region, Africa, and Europe through an extensive network of land and sea routes.
  - Initially named **'One Belt, One Road**,' it was later renamed the BRI to convey a more open and inclusive initiative, moving away from a Chinese-dominated perception.
  - The BRI comprises **two primary components**: the Silk Road Economic Belt and the Maritime Silk Road.
  - **Routes of BRI:**
    - **Silk Road Economic Belt:**
      - √ Focuses on enhancing **connectivity, infrastructure, and trade links** across Eurasia through **overland** transportation routes.
    - **Maritime Silk Road:**
      - √ Emphasizes maritime connections, ports, shipping routes, and infrastructure projects, **spanning from the South China Sea to Indo-China, South-East Asia, the Indian Ocean, Africa, and Europe**.



  - **Objective:**
    - The main goal is to enhance international connectivity through improved infrastructure, trade, and economic cooperation.
    - **Initiative Components**: Encompasses various projects, including **railways, ports, highways, and energy infrastructure.**
  - **Geographic Corridors:**
    - **The land-based Silk Road Economic Belt envisions six key development corridors:**
      1. China-Pakistan Economic Corridor (CPEC).
      2. New Eurasian Land Bridge Economic Corridor.
      3. China-Indochina Peninsula Economic Corridor.
      4. China-Mongolia-Russia Economic Corridor.
      5. China-Central Asia-West Asia Economic Corridor.
      6. China-Myanmar Economic Corridor.

Atmospheric Waves Experiment

Context: The Atmospheric Waves Experiment marks NASA's pioneering experimental effort to investigate the interplay between terrestrial and space weather.

- The Atmospheric Waves Experiment (AWE) is a groundbreaking NASA initiative focused on studying the intricate connections between terrestrial and space weather.
- With the surge in satellite-based services for navigation and communication, monitoring space weather becomes crucial.
- **Atmospheric Waves Experiment (AWE):**
  - AWE is a NASA initiative under the Heliophysics Explorers Program, with a mission cost of $42 million.
  - The experiment aims to study the links between lower atmospheric waves and their impact on upper atmospheric and space weather.
- **AWE Methodology:**
  - AWE will be mounted on the International Space Station, observing Earth from above.
  - It will focus on capturing airglow, colorful light bands in the Earth's atmosphere, to understand the forces driving space weather.
- **Instrumentation:**
  - AWE features the Advanced Mesospheric Temperature Mapper (ATMT).
  - The ATMT, equipped with four telescopes, will scan the mesopause, providing data on airglow brightness at specific wavelengths.
- **Objectives of AWE:**
  - AWE aims to map airglows in the Earth's atmosphere, specifically targeting the mesopause region.
  - The Advanced Mesospheric Temperature Mapper will convert captured data into a temperature map, offering insights into airglow movement and its role in the upper atmosphere and space weather.
- **Atmospheric Gravity Waves (AGWs):**
  - AGWs move through a stable atmospheric layer, contributing to cloud patterns and streaks.
  - These waves extend to space, influencing space weather.
- **Significance of Space Weather:**
  - Space weather, akin to Earth weather, is influenced by solar activities and matter in space.
  - Adverse space weather conditions directly impact vital Earth installations, including satellite-based communication, radio communication, and space-based aircraft orbits, affecting navigation systems and power grids.
- **Influence of Terrestrial Weather:**
  - Space weather is not solely driven by solar emissions but is also influenced by terrestrial weather events.
  - A gravity wave is a crucial factor connecting terrestrial weather to space weather.
- **Gravity Waves:**
  - Gravity waves are vertical waves generated by extreme weather events or sudden disturbances, causing a vertical displacement of stable air.
  - These waves are comparable to ripples formed in water when a pebble is thrown into a pond.
- **Role of Stable Atmosphere:**
  - A stable atmosphere plays a pivotal role in generating gravity waves.
  - The temperature difference between rising air and the atmosphere produces forces that create a wave-like pattern.
- **Importance of Data Profiling:**
  - Vertically profiling the atmosphere is crucial for meteorologists to enhance weather forecasts.
  - Better understanding of wave motion, altitude, and causes aids in comprehending their impacts on weather and space weather.

NEWS IN BETWEEN THE LINES

Pobitora Wildlife Sanctuary

Recently in the Pobitora Wildlife Sanctuary, one-horned Rhinos and their adorable babies were spotted grazing peacefully.

About Pobitora Wildlife Sanctuary:

- Pobitora Wildlife Sanctuary is situated on the southern bank of the Brahmaputra River in the Morigaon district of Assam, India.
- It was declared a wildlife sanctuary in 1987.
- Pobitora Wildlife Sanctuary is renowned for hosting one of the largest populations of Indian rhinoceros in Assam.
- As of 2018, it accommodates around 102 rhinos, witnessing a 10% increase in the past six years.
- The sanctuary's grassland and wetland habitats support diverse flora, including 15 grass species like Cynodon dactylon, whip grass, vetiver, ravennagrass, Phragmites karka, southern cutgrass, and signalgrass.
- Besides rhinos, the sanctuary is home to mammals such as golden jackal, wild boar, feral water buffalo, barking deer, Indian leopard and rhesus macaque.
- Pobitora Wildlife Sanctuary boasts over 375 species of birds and more than 2000 migratory birds.

Forest Right Act 2006

Recently, tribal rights activists approved the compensation provided under the FRA 2006 for land impacted by the 464-km Bharatamala Road connecting Raipur and Visakhapatnam.

About Forest Right Act 2006:

- The Forest Rights Act 2006 acknowledges and safeguards the rights of forest-dwelling communities and tribal populations, rectifying injustices stemming from colonial-era forest laws.
- It was enacted in 2006, replaced colonial forest laws, rectifying historical injustices against traditional forest-dwelling communities.
- This act provides legal recognition of land and forest resource rights for individuals residing on forest land for over 25 years, ensuring their livelihood and food security.
- It defines "minor forest produce," including non-timber forest items such as bamboo, brushwood, honey and tendu leaves.

Historical Context:

- Lord Dalhousie recognized the need for a comprehensive forest policy in 1856 due to timber scarcity for railway expansion.
- The Indian Forests Act of 1865 expanded British control over Indian forests, centralizing forest management.
- The Forest Act of 1878 aimed to establish British dominance, revoking villagers' customary forest resource usage as a privilege.
- The Indian Forest Act of 1927 replaced traditional forest rights, declaring forests as state property and allowing commercial timber exploitation.

Central Adoption Resource Authority

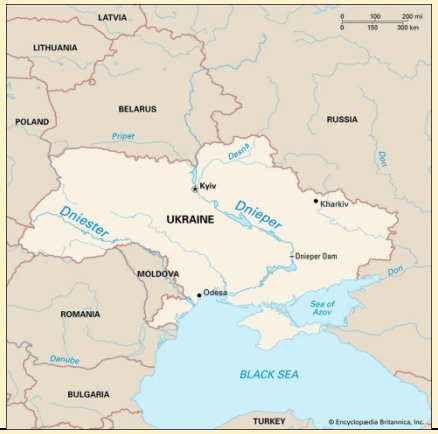
Recently, Central Adoption Resource Authority data has revealed 2,146 children available for adoption as of October 28, 2023.

About Central Adoption Resource Authority:

- Central Authority Resource Authority is an statutory body and operates under the Ministry of Women & Child Development, Government of India.
- It is designated for managing inter-country adoptions following the Hague Convention on Inter-country Adoption of 1993, which India ratified in 2003.
- It primarily manages the adoption processes for orphaned, abandoned and surrendered children through its recognized adoption agencies.
- It facilitates child placements under the Hindu Adoption and Maintenance Act 1956, Guardians and Wards Act 1890 and Juvenile Justice Act 2000.
- Juvenile Justice Act, 2015, mandates the registration of Child Care Institutions (CCIs) and their association with CARA, streamlining their roles in child welfare and adoption procedures.

Dnipro River

Recently, Russia had reported thwarting additional Ukrainian efforts to establish positions on the eastern bank of the River Dnipro.



About Dnipro River:

- The Dnipro River, also known as the Dnieper, is one of Europe's major rivers, flowing through Russia, Belarus and Ukraine before emptying into the Black Sea.
- It is known as Dnepr in Russian, Dnipro in Ukrainian and Dnyapro in Belarusian.
- The river integrates various canals like Dnieper–Donbas, Dnieper–Kryvyi Rih, Kakhovka, Krasnoznamianka and North Crimean Canals.
- The Dnieper River has numerous tributaries, including major rivers like the Desna, Pripyat, Sozh, Berezina, Teteriv, Irpin, and Samara, among others.
- It holds historical importance linked to the 1986 Chernobyl disaster on its tributary, the Pripyat River.

Aurora Borealis

Recently, on November 19, 2023, the skies over Sommaroy, Norway, dazzled with the mesmerizing spectacle of the northern lights, also known as the Aurora Borealis.

About Aurora Borealis:

- The Aurora Borealis (Northern Lights), manifests as a natural display of colorful lights visible in the night sky.
- It is primarily observed in the northern hemisphere.
- This phenomenon arises from the interaction between charged particles from the Sun and Earth's outer atmosphere.
- These lights often appear as swirling rivers of greenish-blue hues, exhibiting varying intensities from faint to vivid displays.
- It is normally seen at higher altitudes in parts of Alaska, Norway and other countries.
- The polar regions exhibit more prominent auroras due to Earth's magnetic field confining solar particles near the poles.

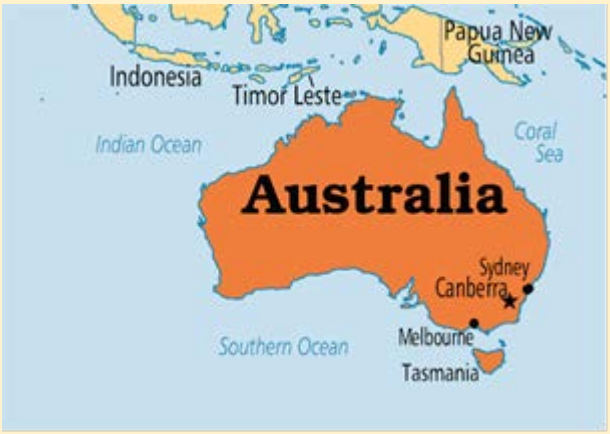
Place in News

Australia

Recently, India and Australia renewed their commitment to bolstering the Quad alliance, aiming to empower it as a significant force for regional stability and global progress.

Australia (Capital: Canberra)

Location: Australia is located in the Southern Hemisphere, between the Indian and Pacific Oceans.



Maritime Boundaries:

- Australia shares its maritime boundaries with Indonesia to the north, Papua New Guinea to the north-east and East Timor to the north-west.
- It is surrounded by the Indian, Pacific and Southern oceans.

Physical Features:

- The Great Australian Bight is a vast, expansive bay situated on the southern coast of Australia.
- Lake Eyre, spanning 9,500 square kilometers, holds the distinction of being Australia's largest lake.
- The Darling Range, an upfaulted block in the far southwest of Australia, comprises granite and laterite, a reddish, iron-rich product resulting from weathered rock.
- The Great Dividing Range is one of the world's longest mountain ranges, stretching over 3,500 kilometers and running parallel to Australia's east coast.

Personality in News

S.S. Badrinath

S.S. Badrinath (24th February 1940-21st November 2023)

Sengamedu Srinivasa Badrinath was born at Triplicane in Chennai.

Contributions:

- Badrinath co-founded Sankara Nethralaya, a charitable eye hospital and a unit of the Medical Research Foundation, in 1978.
- He instituted fellowship programs in various ophthalmology specialties, including Vitreo-Retinal Surgery, Cornea, Oculoplasty, Glaucoma, Uvea, and General Ophthalmology.

Awards and Honors:

- Badrinath had received numerous awards and honors, including the Padma Shri (1983), Dr. B. C. Roy National Award (1991), Paul Harris Fellow Award (1992), V. Krishnamurthy Award for Excellence (2009), and Lifetime Achievement Award from the Madras City Ophthalmological Association (2009).

Ethical Values: Compassion, Objectivity, Integrity of Purpose

POINTS TO PONDER

- Who is the first recipient of Manohar Parrikar Yuva Scientist Award? **- Dr. Mathavaraj S**
- Which country hosted the 'Voice of the Global South Summit' (VOGSS) recently? **- India**
- Which is the Cambridge Dictionary's Word of the Year for 2023? **- Hallucinate**
- As per a CDC-WHO Report, around 11 lakh children in India missed their first dose of which vaccine? **- Measles**
- ExoMars Trace Gas Orbiter Mission is associated with which space agency? **- European Space Agency**