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2 September, 2024

El Niño Effect and Its Impact on India

Context: *Due to the recent El Nino, Namibia is planning to kill hundreds of its most majestic wild animals, including dozens of elephants and hippos, to provide meat for its 1.4 million people.*

Overview of the context

- **Food Crisis in Namibia:**
  - Namibia faces severe food shortages from July to September due to drought driven by El nino, with staple crops like maize failing and 84% of food reserves depleted. Food prices have soared, affecting access for many people.
  - An estimated 1.2 million people are experiencing high levels of acute food insecurity, requiring urgent assistance, according to the IPC.
  - Severe acute malnutrition among children under five has increased, and there have been deaths reported. Women and girls are more vulnerable due to increased distances for collecting food and water, raising risks of gender-based violence.
  - The Namibian government plans to cull wild animals to manage grazing pressure and water availability due to the drought. This is intended to prevent wildlife-human conflicts and mitigate the drought's impact on wildlife.
  - The UN Environment Programme supports culling if it follows scientifically proven, sustainable methods and complies with legal and welfare standards.

What is El Niño?

- The term "El Niño" ("The Boy" in Spanish) to refers to a climate phenomenon characterized by the unusual warming of sea surface temperatures (SST) in the eastern and central tropical Pacific Ocean.
- It is the "warm phase" of the **El Niño-Southern Oscillation (ENSO) cycle.**
- Occurs more frequent than La nina.
- **El Niño–Southern Oscillation (ENSO)** is a global climate phenomenon that emerges from variations in winds and sea surface temperatures over the tropical Pacific Ocean.
- The occurrence of ENSO is not predictable.
- It affects the climate of much of the tropics and subtropics, and has links (teleconnections) to higher-latitude regions of the world.
- the warming phase of the sea surface temperature is known as "El Niño" and the cooling phase as "La Niña".

How does it occurs?

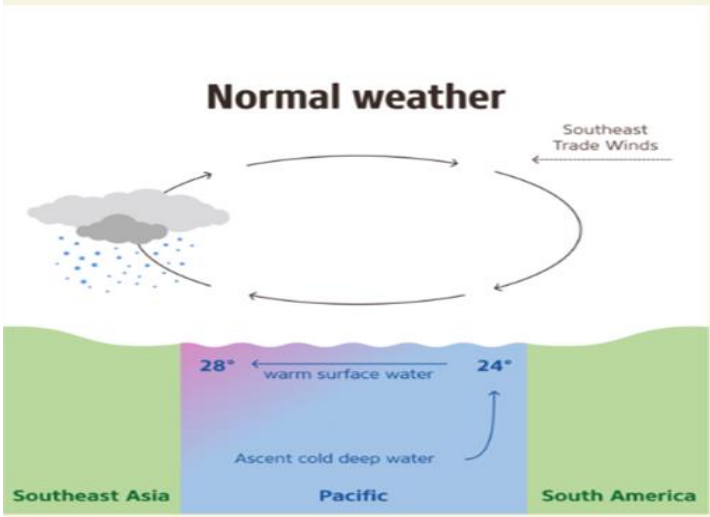
- **Trade Winds**: During El Niño, the easterly trade winds weaken, reducing the upwelling of cold water from the ocean's depths.
- **Sea Surface Temperature:** The warming of the ocean surface disrupts normal weather patterns, leading to significant global climatic changes.

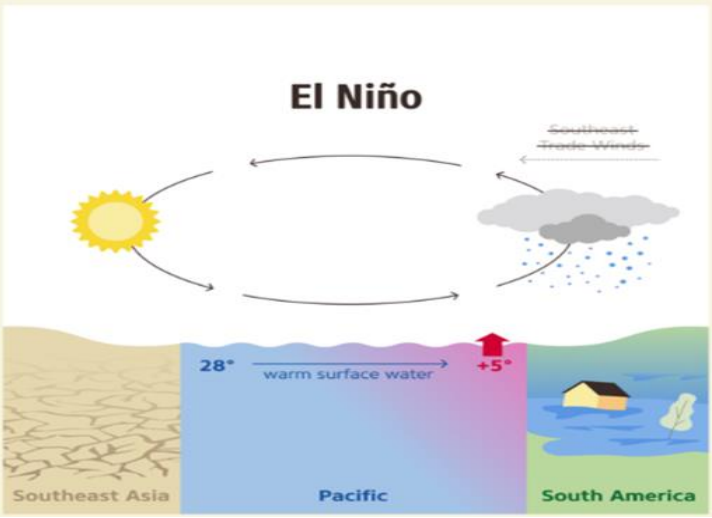
Frequency and Duration

- Occurrence: El Niño events occur irregularly, typically every 2-7 years.
- Duration: Episodes usually last 9-12 months, but some can last longer.

Global Impacts

- **Weather Patterns:**
  - South America: Increased rainfall, leading to floods and erosion.
  - Indonesia & Australia: Droughts and dry conditions.
  - Atlantic Hurricanes: Fewer hurricanes due to altered atmospheric conditions.
- **Health Impact**: Increased incidence of waterborne and vector-borne diseases like cholera, dengue, and malaria in affected regions.





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Impact on India

- **Monsoon:**
  - El Niño is linked to **weaker monsoon activity**, often resulting in below-average rainfall.
  - It significantly increases the **risk of drought, particularly in central, western, and northern India.**
- **Agriculture**:
  - Adverse effects on **kharif crops** (e.g., rice, pulses) due to reduced rainfall.
  - Potential for **crop failure**, leading to economic challenges in rural areas.
- **Temperature**: Higher-than-average temperatures, leading to increased occurrences of heatwaves.

Historical Examples

- 1982-83 & 1997-98: Two of the most intense El Niño events of the 20th century, causing widespread climatic disruptions globally, including severe droughts and floods.

Monitoring and Prediction

- **India Meteorological Department (IMD):**monitors El Niño conditions using data from global climate models, sea surface temperature (SST) observations, and satellite data.
- **Ocean Buoys Network**: Used to monitor oceanic conditions such as sea surface temperature, air temperature, and currents.
- **Oceanic Niño Index (ONI):** A key metric for measuring the strength of El Niño by tracking deviations in sea surface temperature.

Positive Impacts

- **Atlantic Hurricanes:** El Niño can reduce the frequency of hurricanes in the Atlantic, providing temporary relief to hurricane-prone regions.

La Niña

- A climate phenomenon characterized by the unusual cooling of sea surface temperatures (SST) in the central and eastern tropical Pacific Ocean.
- It is the "**cool phase**" of the El Niño-Southern Oscillation (ENSO) cycle.
- **How this occurs:**
  - Trade Winds: During La Niña, the easterly trade winds strengthen, leading to increased upwelling of cold water from the ocean's depths.
  - Sea Surface Temperature: The cooling of the ocean surface influences global weather patterns, often producing opposite effects to El Niño.
  - Temperature: Cooler-than-average global temperatures, especially in the equatorial Pacific region.

Impact on India

- **Monsoon:**
  - La Niña generally leads to stronger and more sustained monsoon rains in India, which can benefit agriculture but also increase the risk of flooding in certain areas.
- **Winter:** Colder-than-average winters, particularly in northern India, due to the influx of cold air from Siberia and South China.
- **Agriculture:** Positive impact on crop yields due to ample rainfall, but potential risks of waterlogging and crop damage in flood-prone areas.

Global Impacts

- **Southeast Asia and India:** Enhanced monsoon activity, leading to increased rainfall.
- **Australia:** Higher likelihood of heavy rainfall and flooding.
- **South America:** Drier conditions, particularly in regions like Peru and Ecuador.

Forever Chemicals

Context:Cattles in US toxicated by Forever Chemicals

A colloquial term for per- and polyfluoroalkyl substances (PFAS), a large group of synthetic chemicals known for their persistent environmental and health impacts.

- They are called Forever chemicals because of their tendency to stick around in the atmosphere, rainwater, and soil for long periods of time.
- PFAS are resistant to heat, water, and oil, which makes them useful in various industrial and consumer products.
- Drinking contaminated water, eating food with PFAS residues, and direct contact with PFAS-treated products.
- PFAs are also listed in the Stockholm Convention.

Stockholm Convention

- **Global Treaty:** Aimed at protecting human health and the environment from persistent organic pollutants (POPs).
- **Characteristics of POPs:**
  - Persistent in the environment.
  - Widespread distribution.
  - Accumulate in fatty tissue of organisms.
  - Toxic to humans and wildlife.

Objectives

- Support Transition: Encourage the use of safer alternatives to POPs.
- Target Additional POPs: Address and control new POPs identified over time.
- Clean-Up: Manage and dispose of old stockpiles and equipment containing POPs.

- Global Cooperation: Promote collaborative efforts towards a POPs-free future.

➢ **India's Status**

- **Ratification:** India ratified the Stockholm Convention in 2006.
- **Article 25(4) Provision:** Allows India to maintain a default "opt-out" position on amendments to the convention's Annexes unless explicit ratification or acceptance is deposited with the UN depositary.

➢ **Common Types**

- **PFOS (Perfluorooctane sulfonic acid):** Previously used in firefighting foams and stain-resistant treatments.
- **PFOA (Perfluorooctanoic acid):** Used in non-stick cookware and water-repellent fabrics.

➢ **Applications**

- **Consumer Products:** Non-stick cookware, water-repellent clothing, stain-resistant carpets, and food packaging.
- **Industrial Uses:** Firefighting foams, hydraulic fluids, and various manufacturing processes.

➢ **Environmental Impact**

- **Persistence:** PFAS do not break down easily in the environment, leading to long-term contamination of soil, water, and air.
- **Bioaccumulation:** These chemicals accumulate in living organisms, including humans, leading to widespread environmental contamination.

➢ **Health Impacts**

- **Toxicity:** Linked to various health issues, including liver damage, immune system suppression, developmental issues in children, and an increased risk of cancer.
- Recent research has also revealed that long-term low-level exposure to certain PFAs can make it difficult for humans to build antibodies after being vaccinated against various diseases

➢ **Regulation and Management**

- **Regulation:** Many countries are beginning to regulate PFAS due to their harmful effects, including setting limits for PFAS in drinking water and soil.
- **Cleanup Efforts:** Remediation of contaminated sites involves complex and costly processes, including advanced filtration and soil treatment methods.

➢ **Current Research and Initiatives**

- Detection and Analysis: Development of new analytical methods to detect and measure PFAS at very low concentrations.
- Alternatives: Research into safer chemical alternatives and improved materials to replace PFAS in products.

NEWS IN BETWEEN THE LINES

Dongria Kondh Tribe

Recently, the generation of Dongria Kondh tribals in Odisha's Rayagada district have struggled with education access due to their remote, hilly forest location.

About Dongria Kondh Tribe:

- The Dongria Kondh are a **particularly vulnerable tribal group** (PVTG) from the Rayagada and **Kalahandi districts of Odisha.**
- They are a **primitive subgroup of the Kondhs** of the **Munda ethnic group** who live in the **Niyamgiri hills** of Odisha.
- They are **known for their traditional handloom sarees**, the Dongria saree.
- They **worship Niyam Raja**, the supreme god of the Niyamgiri forest and believe that they are his royal descendants.
- The Dongria Kondh **practice horticulture and shifting cultivation**.
- The people of Niyamgiri **speak Kui language**, which is **spoken but not written**, mainly among the Kondh community.
- They **celebrate the popular Podha festival** in February-March with new clothes and generous quantities of **Salap Rasa,** a drink prepared from the juice drawn from the **Salap tree.**

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India Post Payments Bank

India Post Payments Bank (IPPB) celebrated its 7th Foundation Day (IPPB Day) on 1st September 2024.

About the India Post Payments Bank:

- The India Post Payments Bank (IPPB) is a **subsidiary of the Indian postal department**.
- It was **launched as a pilot project on January 30, 2017,** in **Ranchi (Jharkhand)** and **Raipur (Chhattisgarh)**.
- It is **fully owned by the Government of India** under the **Department of Post, Ministry of Communication.**
- It **aims to provide accessible**, **efficient banking services** to every household in India, promoting financial inclusion and empowerment.
- It **operates through a network of one Branch** and **649 Banking outlets**, supported by nearly 1.55 lakh post offices and 3.0 lakh postal employees.
- It **includes Savings** and **Current Accounts**, **money transfer services**, **Direct Benefits Transfers (DBT)**, **third-party products** like loans and insurance, bill payments, and merchant services.
- Its headquarter is located in **New Delhi**.

BioE3 Policy

Recently, the Union Minister for Science and Technology Dr. Jitendra Singh released the Biotechnology for Economy, Environment and Employment (BioE3) Policy 2024 in New Delhi.

About BioE3 Policy:

- The Biotechnology for Economy, Environment and Employment (BioE3) policy is a **milestone for India's bioeconomy** and aims to be a game-changer for **achieving Viksit Bharat @2047**.
- It aligns with India's goals of a **'Net Zero' carbon economy** and **supports Mission LiFE** (Lifestyle for Environment).
- Key **sectors targeted include bio-based chemicals** and **enzymes**, functional foods, **smart proteins**, precision **biotherapeutics**, climate-resilient agriculture, carbon capture and utilization and **futuristic marine** and **space research.**
- India's bioeconomy has grown from **$10 billion in 2014** to over **$130 billion in 2024,** with a projection to reach **$300 billion by 2030**.
- The policy **includes a Public-Private Partnership** (PPP) model to incentivize industry participation and promote employment generation.

Place in News

Myanmar

Recently, Myanmar announced to conduct a comprehensive population and housing census scheduled from October 1 to 15 to gather accurate population statistics.

Myanmar (Capital: Naypyidaw)

Location: Myanmar, also known as Burma (the official name until 1989), is a country located in **Southeast Asia.**

Boundaries: Myanmar shares its borders with **Laos** (East), **Bangladesh** and **India** (Northwest), **China** (Northeast), **Thailand** (Southeast), the **Andaman Sea** (South) and the **Bay of Bengal** (Southwest).

Physical Features:

- The highest point in Myanmar is **Hkakabo Razi,** located in the northern part of the country, in the Himalayan mountain range.
- Major rivers in Myanmar include the **Irrawaddy** (Ayeyarwady), **Salween** (Thanlwin) and **Chao Phraya**.
- Myanmar is rich in minerals, including **jade**, **rubies**, **sapphires**, **gold**, **silver**, tin, tungsten, copper and **natural gas**.
- Myanmar has a **tropical monsoon climate**.

Membership: Myanmar is a member of several international organizations, including the **United Nations** (UN), **Association of Southeast Asian Nations** (ASEAN), **South Asian Association for Regional Cooperation** (SAARC) (observer status), **World Bank** (WB), **International Monetary Fund** (IMF) and **World Health Organization** (WHO).

POINTS TO PONDER

- Which industry did the Hema Committee focus on in its report? **– Malayalam film industry**
- who won the first gold medal in 10m air rifle at Paris Paralympics 2024? **– Avani Lekhara**
- Where is the Niyamgiri hill range located ? **– Niyamgiri is a hill range situated in the districts of Kalahandi and Rayagada in the south-west of Odisha, India.**
- Where is Kuchinoerabu Island located? **– Kuchinoerabu Island is a volcanic island in Japan.**
- Who won the men's long jump event in the 63rd National Open Athletics Championship? **– S.Arya**