GS PAPER II

CJ climate ruling reshapes India's policy debate

On July 23, the International Court of Justice (ICJ) issued an advisory opinion declaring climate change an existential threat. Though not legally binding, the opinion has gained attention across India—from policymakers to students. It raises urgent legal and policy issues for countries balancing development and climate responsibility.

India's Position in Global Climate Diplomacy

1. **India's Cautious Response:** India neither supported nor opposed the ICJ case initiated by Vanuatu. This reflects India's **strategic neutrality**, shaped by its unique developmental circumstances and global climate expectations.
2. **Development Needs vs. Climate Action:** India still strives for **universal access to electricity, healthcare, and jobs**. Its **per capita emissions remain among the world's lowest**, with many still using biomass for cooking and facing erratic power supply.
3. **Strong Domestic Commitments:** India aims for **50% of its electricity from renewables by 2030**. Emissions intensity is falling, afforestation has grown, and **electric buses now operate in cities** like Delhi, Mumbai, Bengaluru, and Hyderabad.
4. **Active Global Leadership:** India leads the **International Solar Alliance** and **Mission LiFE**. As G20 president, it ensured climate finance stayed on the global agenda, showing leadership despite limited historical emissions.

Significance of the ICJ Advisory Opinion

1. **Legal Foundation of Climate Duties:** The opinion draws from **climate treaties, human rights law, the UN Charter, and the law of the sea**. It establishes that countries must **prevent harm, reduce emissions, adapt, and cooperate globally**.
2. **Rights-Based Obligations:** Climate change is said to **violate rights to life, health, and housing**. States must act based on science and adopt strong national plans. **Legal pressure to strengthen actions** may follow.
3. **Challenge to Polluting Subsidies:** Subsidies for fossil fuels are now under **legal as well as fiscal scrutiny**. The opinion questions their justification and **pushes for a shift to cleaner alternatives**.
4. **Support for Equity Principles:** The ICJ reaffirms the **principle of common but differentiated responsibilities**, giving legal weight to India's claim that major emitters must bear more responsibility.

Emerging Legal and Policy Challenges for India

1. **Legal Readiness:** Indian courts already treat environmental health as part of the **right to life**. The ICJ ruling may spur **new litigation**—both domestic and from vulnerable neighboring nations. Anticipating these is vital.
2. **Weak Enforcement Systems:** India's environmental laws are often poorly implemented. **Pollution control agencies lack resources**. The ICJ has stressed due diligence, requiring stronger institutional capacity.
3. **Subsidy Reform:** Fossil fuel subsidies help the poor but **hinder clean energy adoption**. India must **reform subsidy structures** to protect the poor while promoting sustainability.

Diplomatic and Ethical Considerations

1. **Balancing Fairness and Ambition:** India must continue ambitious climate action while defending its **development needs**. Climate justice should not result in **unfair burdens** on poorer nations.
2. **A New Climate Direction:** The ICJ opinion ends the era of voluntary ambition. For India, the task ahead is to align **duty with dignity and ambition with justice**.

GEOGRAPHY GS PAPER I

Tsunami

An 8.8 magnitude earthquake struck Russia's Kamchatka Peninsula triggering a tsunami impacting Russia, Japan, and issuing warnings as far as Hawaii and New Zealand.

What is a Tsunami?

- A tsunami is a series of high-energy sea waves caused by sudden, large-scale disturbances such as **undersea earthquakes, volcanic eruptions, or landslides**.
- These waves travel rapidly across oceans and cause catastrophic destruction upon landfall.

Tsunami Formation:

1. **Seafloor Disturbance:** Sudden undersea tectonic activity vertically displaces the ocean floor, pushing/pulling large volumes of seawater.
2. **Wave Generation:** Displaced water creates long-wavelength waves traveling outward at speeds up to **800–900 km/h** in deep oceans, with minimal surface height (30–50 cm).
3. **Drawback Effect:** Nearshore, the sea often recedes dramatically (trough arrives first) exposing seabeds—an early warning ignored by many.
4. **Wave Amplification:** In shallow waters, speed reduces, wave height rises (>10 m) due to energy compression.

Plot-1441, Opp. IOCL Petrol Pump, CRP Square, Bhubaneswar-751015
Ph.: 8984111101, 8093083555. Web: www.vanikias.com, E-mail: vaniksias@gmail.com

5. **Coastal Impact:** Massive waves inundate inland, sweeping away lives, infrastructure, and dragging debris back to sea.

Characteristics of Tsunami:

- **Long Wavelength:** Up to **200 km** between successive crests.
- **High Energy & Speed in Deep Sea:** Low amplitude (~30–50 cm) but speeds of **800–900 km/h**.
- **Multiple Waves:** Series of waves over hours; later waves often more destructive.
- **Invisible Offshore:** Ships at sea often fail to notice due to low amplitude.

Implications of Tsunamis:

- **Loss of Lives & Health Hazards:** Drowning, blunt force trauma (e.g., 2004 Indian Ocean tsunami fatalities).
- **Infrastructure Damage:** Ports, bridges, nuclear plants (e.g., Fukushima, Japan) destroyed.
- **Environmental Loss:** Saltwater intrusion damages croplands; coastal habitats eroded.
- **Service Disruptions:** Collapse of electricity, water, transport, and communication delays rescue.
- **Secondary Hazards:** Fires, chemical leaks, and landslides worsen devastation.

Tsunami Early Warning Systems:

India's System (INCOIS):

- **Seismic Monitoring:** Detects global quakes within 10 mins.
- **DART Buoys (BPRs):** Real-time deep-sea pressure changes.
- **Tide Gauges:** Verify wave arrival and height.
- **Alert Dissemination:** SMS, sirens, media, and satellite alerts to NDMA/public.

Global System:

- **IOC-UNESCO:** Coordinates global/regional warnings (PTWC, JMA).
- **Seismic Networks:** Thousands of stations assess risks.
- **DART + Radar Altimetry:** Confirm tsunami formation and sea-level anomalies.

Conclusion:

Tsunamis, though rare, are catastrophic. Robust **early warning systems (INCOIS)**, community awareness, and **global cooperation (IOC-UNESCO)** are vital to mitigate impacts.

PRELIM FACTS

1. Kaziranga National Park

Kaziranga Tiger Reserve (KTR) in Assam has recorded the third-highest tiger density in India after Bandipur and Corbett, as per the latest report released by the Chief Minister of Assam on Global Tiger Day 2025.

About Tiger Density in India:

- **What is Tiger Density?**
  - Tiger density refers to the number of tigers per 100 sq. km. It is a key indicator of healthy predator populations and ecological balance.
- **Top 3 Tiger Reserves by Density (2024):**
  - **Bandipur (Karnataka):** 19.83 tigers/100 sq. km
  - **Corbett (Uttarakhand):** 19.56 tigers/100 sq. km
  - **Kaziranga (Assam):** 18.65 tigers/100 sq. km
- **Kaziranga's Tiger Count:** Kaziranga recorded **148 tigers** over 1,307.49 sq. km, up from 104 in 2022, including 27 tigers from the newly surveyed Biswanath Division.

Plot-1441, Opp. IOCL Petrol Pump, CRP Square, Bhubaneswar-751015
Ph.: 8984111101, 8093083555. Web: www.vanikias.com, E-mail: vaniksias@gmail.com

About Kaziranga National Park:

- **Location:** Located in the **Golaghat and Nagaon districts** of Assam, along the floodplains of the Brahmaputra River.
- **Historical Significance:** Established in 1905 on the recommendation of **Mary Curzon**, declared a **UNESCO World Heritage Site in 1985**, and a **Tiger Reserve in 2006**.
- **Ecological Features:** The park lies on the **Eastern Himalayan biodiversity hotspot edge**, with habitats including tall elephant grass, marshes, and tropical forests.
- **Flora:**
  - **Four vegetation types:** alluvial grasslands, savanna woodlands, moist deciduous, and semi-evergreen forests.
  - Notable trees include **Elephant Apple, Cotton Tree, and Indian Gooseberry**.
- **Fauna:** Hosts the world's **largest population of Indian one-horned rhinoceros** (2,200+), along with tigers, elephants, swamp deer, Hoolock gibbons, and migratory birds like **greater adjutant** and **black-necked stork**.

2. Paithani sarees

Prime Minister Narendra Modi in the monthly radio programme 'Mann Ki Baat' praised the traditional craftsmanship of Paithani sarees.

About Paithani sarees

- Paithani sarees originated from the town of **Paithan in Maharashtra, India**
- **Distinctive Style**: These sarees are famous for their **square motifs, vibrant colors, and intricate peacock designs on the pallu**, symbolizing elegance and heritage.
- The *Narali* is one of the most common borders seen on the *Paithani*.
- **Material & Technique**: Made from **fine silk and zari (gold thread) available in the country**
- Paithanis are entirely handwoven using traditional methods, making them one of the **most luxurious and expensive sarees in India**.
- **Cultural Significance**: Paithani sarees, once called ***"Dev Vastra"*,** were worn by royals and revered in ancient Hindu and Buddhist texts. Today, they are a cherished part of Maharashtrian weddings and festive traditions.
- Paithani sarees are considered a **symbol of Maharashtrian pride and artistry.**
- **GI Tag**: Paithani sarees were granted the **Geographical Indication (GI) tag in 2010**, recognizing their unique origin and traditional craftsmanship from Paithan, Maharashtra.

3. Mount Cilo

Glaciers of Mount Cilo in southeastern Turkey have lost nearly 50% of their ice cover in 40 years, with climate change and heatwaves accelerating melt rates.

About Mount Cilo:

- **Location:**
  - Mount Cilo is the **second-highest peak in Turkey**, rising to **4,135 meters** at its summit Reşko (also called Gelyaşin or Uludoruk).
  - It is situated in the Yüksekova district of **Hakkâri Province**, bordering Iraq, and lies within the East Taurus Mountains (Doğu Toroslar) in Eastern Anatolia.
- **Physical Features:**
  - It spans **30 km in length**, forming the **western arm of the Cilo-Sat Mountains National Park**, declared in 2020.
  - The massif has **rugged topography** with sharp ridges, steep limestone cliffs, deep gorges, and glacial valleys.
  - Nearby is **Suppa Durek (Erinç Tepe)**, Turkey's third-highest peak at 4,116 meters.
- **Glacial Retreat:**
  - The region has seen **rapid glacier loss** due to global warming, with visual signs like ice blocks flowing into streams and receding ice sheets.
  - Experts report **half of the continuous snow and ice cover has vanished** since the 1980s.
  - Melting glaciers now **feed torrents and waterfalls** more intensely, altering water cycles.
- **Climate Extremes:**
  - Turkey has faced rising heatwaves and reduced rainfall.
  - **Silopi**, just 200 km away, recorded **50.5°C** in July 2025 — the **hottest ever in Turkey**.
  - UN projections warn of **30% less rainfall** and **5–6°C temperature rise** by 2100 in the region.

Plot-1441, Opp. IOCL Petrol Pump, CRP Square, Bhubaneswar-751015
Ph.: 8984111101, 8093083555. Web: www.vanikias.com, E-mail: vaniksias@gmail.com

4. Operation ShivShakti

The Indian Army eliminated two terrorists attempting infiltration across the Line of Control in Poonch district under Operation ShivShakti, just days after neutralising three Lashkar-e-Taiba operatives in Operation Mahadev.

About Operation ShivShakti:

- **What is Operation ShivShakti?**
  - It is a **counter-infiltration mission** launched by the Indian Army to foil attempts by terrorists to cross the LoC into Jammu & Kashmir territory.
- **Launched by:** Conducted by the **Indian Army's White Knight Corps** in synergy with **Jammu & Kashmir Police** (JKP), based on precise multi-agency intelligence inputs.
- **Area of Operation:** Executed in the **Degwar sector of Poonch**, particularly near **Maldivalan**, a sensitive zone along the LoC known for infiltration attempts.
- **Objective:** To **prevent cross-border terrorism** by intercepting and neutralising infiltrators before they could reach civilian areas or cause harm to infrastructure.
- **Operational Features:**
  - **Swift and accurate firepower** ensured minimal response time.
  - Recovery of **three weapons**, indicating preparation for high-intensity engagement.
  - Based on **synchronised intelligence inputs** from Army intel and JKP, demonstrating multi-agency coordination.
  - Continuous **search and cordon operations** underway to identify any remaining threats in the region.

5. A new human blood group—CRIB

A new human blood group—CRIB—has been discovered at the Rotary Bangalore TTK Blood Centre. It is the first of its kind globally, officially recognised by the International Blood Group Reference Laboratory (IBGRL), UK.

About A new human blood group—CRIB:

- **What is CRIB Blood Group?**
  - **CRIB** stands for **Cromer India Bengaluru**.
  - It is a **new antigen** identified within the **Cromer (CR) blood group system**, not previously observed in any human sample worldwide.
  - Discovered in a **38-year-old South Indian woman** undergoing cardiac surgery in Kolar, Karnataka.
- **How was it Identified?**
  - The woman's blood tested **panreactive**—meaning it reacted with all tested samples and was **incompatible** even with O+ blood.
  - No compatible match was found among **20 family members**
  - Sample was sent to **IBGRL, UK**, where after **10 months of molecular analysis**, the **new antigen was confirmed** and officially named **CRIB**.
- **Scientific Significance:**
  - CRIB is now a **new entry in global transfusion medicine**.
  - Named using standard ISBT nomenclature.
  - Adds to India's contribution in **rare blood immunogenetics**.
  - Highlights the **need for rare donor registries** and **global collaboration** in blood typing.
- **What is the Cromer Blood Group System?**
  - **Cromer system** is a rare blood group classification involving antigens located on the **DAF (Decay-Accelerating Factor)** protein on red cells.
  - These antigens are important in **immune reactions** during transfusion.

ANSWER WRITING

Q. This year marks 1,000 years since the construction of the Gangaikonda Cholapuram temple and Rajendra Chola I's maritime expedition to Southeast Asia. Discuss the significance of the Chola dynasty in enriching Indian architecture and demonstrating administrative acumen. (10 Marks, 150 words)

The Chola dynasty, under Rajaraja and Rajendra Chola I, excelled in architecture and administration. Their 1,000-year-old temple and maritime legacy reflect advanced design and governance that still inspire modern India.

Significance of the Chola Dynasty in Enriching Indian Architecture

- **Monumental Temples**: The Cholas built some of India's grandest temples, such as the Brihadisvara Temple in Thanjavur and Gangaikonda Cholapuram.
  Eg: Dravidian architecture are **UNESCO World Heritage Sites,** remarkable for their scale, precision, and artistic brilliance.

Plot-1441, Opp. IOCL Petrol Pump, CRP Square, Bhubaneswar-751015
Ph.: 8984111101, 8093083555. Web: www.vanikias.com, E-mail: vaniksias@gmail.com

- **Engineering Marvels**: Chola temples, like Gangaikonda Cholapuram with its 180 ft vimana topped by an 80-ton stone, have stood for a millennium, exemplifying resilience against earthquakes and decay.
- **Sculptural Excellence:** The Cholas pioneered exquisite bronze and stone sculptures, particularly representations of **Shiva such as the Nataraja.** Their detailed carvings and artistry on temple walls and pillars set new standards for Indian art.
- **Structural Innovations:** Innovations like pillared halls (mandapas), sophisticated geometric layouts, and the integration of multiple shrines in temple complexes were popularized during their reign and influenced later South Indian temple architecture.
- **Integration of Art and Utility:** Chola temples were not only places of worship but also served as centers for education, arts, and local administration, reflecting the dynasty's emphasis on integrating utility with spirituality and aesthetics.

Significance of the Chola Dynasty in Demonstrating Administrative Acumen

- **Local Self-Governance:** The Cholas pioneered early democracy through the **Kudavolai ballot system** and village assemblies (**Sabhas, URs**), as seen in **Uttaramerur inscriptions**, enabling local autonomy in administration, revenue, and justice centuries before modern democracies.
- **Sophisticated Record-Keeping and Revenue System**: The Cholas implemented meticulous land surveys and record-keeping for tax and land revenue, many of which survive as inscriptions and copper plates. Their efficient revenue collection enabled sustained public works and social welfare.
- **Water Management and Irrigation:** The Cholas built an extensive network of tanks, reservoirs, canals, and aqueducts such as Cholagangam supported by committees and funded through irrigation and fisheries taxes, reflecting advanced water management.
- **Investment in Public Works:** The Cholas invested heavily in infrastructure—roads, bridges, granaries, public buildings, and urban planning benefiting trade, mobility, and urbanization.
- **Decentralized yet Strong Central Authority:** While village assemblies managed local affairs, the king and a council of ministers governed the empire's larger interests, balancing centralization with vibrant local self-rule. This hybrid model fostered both stability and local participation.

Conclusion

The Chola dynasty blended artistic brilliance with visionary governance, leaving enduring legacies in grand temples, decentralised administration, and sustainable development offering timeless lessons for modern India in architecture, governance, and environmental stewardship.

MCQ

1. With reference to Kaziranga Tiger Reserve (KTR), consider the following statements:
   1. It has the third-highest tiger density in India after Bandipur and Corbett.
   2. It is located along the floodplains of the Brahmaputra River.
   3. It was declared a Tiger Reserve in 2006 and a UNESCO World Heritage Site in 1985.

   Which of the statements given above are correct?
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1, 2 and 3
   (d) 1 only
2. Which of the following characteristics are associated with Paithani sarees?
   1. They are handwoven silk sarees with zari work, originating from Maharashtra.
   2. They feature square motifs and peacock designs on the pallu.
   3. They received a GI tag for their craftsmanship and origin.

   Select the correct answer using the code given below:
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1, 2 and 3
   (d) 1 only
3. Consider the following statements about Mount Cilo:
   1. It is located in southeastern Turkey within the East Taurus Mountains.
   2. It is the highest peak in Turkey and forms part of the Cilo-Sat Mountains National Park.
   3. Its glaciers have lost nearly 50% of their ice cover over the last four decades.

   Which of the statements given above are correct?
   (a) 1 and 2 only
   (b) 1 and 3 only
   (c) 2 and 3 only
   (d) 1, 2 and 3
4. Operation ShivShakti, recently seen in the news, is related to:
   (a) Counter-narcotics operation in Myanmar
   (b) Counter-infiltration mission along the Line of Control in Jammu & Kashmir
   (c) Evacuation mission of Indian citizens from conflict zones abroad
   (d) Anti-Naxal operations in central India
5. Which of the following statements about the newly discovered CRIB blood group is correct?

Plot-1441, Opp. IOCL Petrol Pump, CRP Square, Bhubaneswar-751015
Ph.: 8984111101, 8093083555. Web: www.vanikias.com, E-mail: vaniksias@gmail.com

1. It stands for Cromer India Bengaluru.
2. It is the first blood group antigen discovered within the Cromer blood group system globally.
3. It was identified in a patient in Karnataka and confirmed by the International Blood Group Reference Laboratory (IBGRL), UK.

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1, 2 and 3
(d) 1 only

6. In the context of transfusion medicine, the Cromer blood group system is associated with:
(a) Antigens located on the Duffy glycoprotein
(b) Antigens located on the Decay-Accelerating Factor (DAF) protein on red cells
(c) Rh factor antigen reactions
(d) ABO compatibility antigen testing

7. With reference to the recent ICJ advisory opinion on climate change, consider the following statements:
1. The opinion is legally binding on all UN member states.
2. It recognizes climate change as a violation of basic human rights such as the right to life and health.
3. It reinforces the principle of common but differentiated responsibilities (CBDR) in climate action.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2, and 3

8. Which of the following initiatives are correctly matched with India's climate leadership efforts?
1. **International Solar Alliance (ISA):** Promotes solar energy adoption globally.
2. **Mission LiFE:** Focuses on sustainable lifestyles and climate-conscious behaviour.
3. **G20 Presidency:** Introduced binding commitments on fossil fuel phase-out.

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

9. Consider the following statements about Tsunamis:
1. In deep oceans, tsunamis travel at speeds comparable to jet aircraft but with very low wave heights.
2. The first tsunami wave is always the largest and most destructive.
3. Tsunami waves can have wavelengths extending up to hundreds of kilometres.

Which of the statements given above is/are correct?
(a) 1 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

10. Which of the following are components of India's Tsunami Early Warning System?
1. Seismic monitoring stations
2. DART buoys (Bottom Pressure Recorders)
3. Tide gauges along coasts
4. Doppler Weather Radars

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

Plot-1441, Opp. IOCL Petrol Pump, CRP Square, Bhubaneswar-751015
Ph.: 8984111101, 8093083555. Web: www.vanikias.com, E-mail: vaniksias@gmail.com