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Daily Current Affairs

To The Point

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21 May 2025

GS Paper 2 – Polity and Governance

1 Supreme Court Orders States to Reclaim Forest Land Illegally Allotted to Private Entities

Context: In a game-changing development, the **Indian government is set to introduce two major amendments** to reshape its nuclear energy sector during the upcoming **Monsoon Session of Parliament**. This move signals a strategic shift — allowing **private and foreign players** to finally participate in the country's nuclear power generation.

A New Era for India's Atomic Energy Sector:

India stands at a critical juncture in its **energy transformation journey**. With increasing electricity demand and global climate commitments, the government is looking to **modernize the nuclear sector** — an area long dominated by **state-run entities** such as the **Nuclear Power Corporation of India Limited (NPCIL)**.

These reforms follow a significant boost from the **United States**, clearing a longstanding barrier to bilateral civil nuclear cooperation and unlocking long-delayed opportunities from the historic **Indo-US nuclear deal**.

Key Legislative Reforms: Unlocking the Sector:

1. Overhaul of the Civil Liability for Nuclear Damage Act (2010):

Currently, the **liability for nuclear accidents** lies heavily with equipment vendors — a major deterrent for companies like **Westinghouse, GE-Hitachi, and Framatome**. The proposed amendment will:

- **Cap the vendor's liability** to the original value of the contract.
- Introduce a **defined liability window**, post which vendors are no longer accountable.

This is designed to **de-risk foreign investment** and address long-standing industry concerns around **financial exposure and legal uncertainty**.

2. Amendment to the Atomic Energy Act (1962):

The second key change would:

- Allow **private Indian players** — and potentially **foreign partners** — to **operate nuclear power plants**.
- Enable **public-private partnerships** in atomic energy.
- Allow **minority equity stakes** for foreign firms in upcoming projects.

These steps would invite **greater investment**, **competition**, and **technology innovation**, catalyzing the next wave of growth in India's nuclear power industry.

US Regulatory Green Light: A Turning Point

In **March 2025**, the **US Department of Energy** granted **Holtec International** permission to **transfer Small Modular Reactor (SMR) technology** to Indian partners, including **Tata Consulting Engineers** and **Larsen & Toubro**. This **Part 810 clearance** is significant because:

- It lifts a **long-standing restriction** on US firms participating in India's nuclear development.
- It enables **technology co-production**, empowering India to **localize SMR manufacturing**.

This move aligns US and Indian strategic interests while enabling India to emerge as a **regional nuclear technology hub**.

Geostrategic and Trade Implications:

These reforms are not isolated. They form part of a broader push to deepen **Indo-US strategic and trade ties**, potentially paving the way for:

- A **comprehensive trade pact** with nuclear energy as a key pillar.
- **Expanded clean energy collaboration**, especially in **climate-resilient technologies**.
- Greater **strategic trust**, solidifying India's role as a **critical partner** in the Indo-Pacific.

India could also become a **key export base** for advanced nuclear technologies, particularly **SMRs**, in Southeast Asia and Africa.

Boosting India's Energy Security and Climate Ambitions:

With a target of **net-zero emissions by 2070**, India's energy basket must shift toward **low-carbon baseload solutions**. Nuclear power provides:

- A **stable, carbon-free alternative** to coal.
- The potential for **large-scale energy deployment** with **minimal land and water footprint**.
- A chance to **decarbonize industrial sectors**, including **steel and hydrogen production**.

India currently lags behind in nuclear capacity — contributing less than **2%** of total electricity generation. These reforms could change that narrative.

Projection: India's electricity demand is expected to **double by 2040**. Nuclear can be a key player in managing peak loads and ensuring grid stability.

The Road Ahead: Challenges to Navigate

While the proposed reforms promise transformation, they face several hurdles:

- **Public safety concerns** and **political resistance**, especially over private participation in sensitive sectors.
- **Legislative delays**, particularly in amending the liability framework.
- Need for **robust safety protocols** and **transparent regulatory oversight** to manage private operations.

Yet, successful implementation could place India among **top-tier nuclear innovators**, leading the charge in **advanced reactor technologies**.

Conclusion: A Strategic Shift With Global Impact

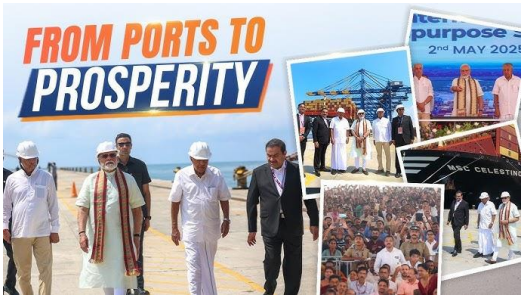
India's decision to **reform its nuclear laws** and embrace **private and foreign participation** marks a **historic policy evolution**. It reflects a forward-looking approach to:

- **Modernize energy infrastructure**
- **Strengthen strategic global alliances**
- **Accelerate clean energy goals**

With **US collaboration**, **industry confidence**, and **parliamentary will**, India is poised to unlock a new era in nuclear energy — not just as a power source, but as a symbol of **technological self-reliance and global leadership**.

GS Paper 3 – Economy

2 India Sets Sail Towards Global Maritime Leadership



Context: India is no longer content with merely being a **regional maritime player**. It is rapidly positioning itself as a **global port infrastructure leader**, leveraging a mix of public-private partnerships, bilateral agreements, and strategic investments. With a bold vision to expand its port presence beyond national shores, **India's maritime strategy** is now a core pillar of its foreign policy and economic diplomacy.

Africa: The New Frontier for Indian Port Diplomacy

Tanzania at the Heart of Indian Maritime Ambitions:

India has intensified its engagement in **East Africa**, particularly in **Tanzania**, where it is establishing a multi-layered presence:

- **Jawaharlal Nehru Port Authority (JNPA)** is spearheading the creation of an **industrial park** in Tanzania to enhance trade connectivity.
- **Cochin Shipyard Limited** has partnered with **Marine Services Co Ltd**, a Tanzanian firm, to strengthen local shipbuilding and repair capabilities.
- **Adani Ports and SEZ Ltd (APSEZ)** has taken a commanding role by:
    - Managing **CT2 at Dar es Salaam Port** under a 30-year concession.
    - Owning a significant stake in **Tanzania International Container Terminal Services (TICTS)** through its joint venture, **East Africa Gateway Ltd (EAGL)**, in collaboration with **AD Ports Group** and **East Harbour Terminals Ltd**.

Chabahar: India's Strategic Gateway to Central Asia

Transforming a Regional Outpost into a Global Connector:

The **Chabahar Port** in Iran, operated by **Indian Ports Global Ltd (IPGL)**, is fast becoming a cornerstone of India's **connectivity to Afghanistan, Central Asia, and Europe**:

- **TEU Throughput** has surged from just **9,000 containers in FY23** to **64,000 TEUs by January FY25**, with expectations to hit **75,000 TEUs** by the end of FY25.
- A planned **₹4,000 crore investment** aims to increase capacity to **500,000 TEUs** over the next decade.
- Upcoming developments include the deployment of **mobile harbor cranes** and the construction of a **second berth**, enhancing the port's handling efficiency.

Regional Integration: Strengthening India's Maritime Neighbourhood:

Myanmar and Sri Lanka in Focus:

India is reinforcing maritime ties with its immediate neighbors to foster **regional interconnectivity**:

- In **Myanmar**, IPGL is managing **Sittwe Port**, part of the **Kaladan Multimodal Transit Transport Project**, which connects India's northeast with Southeast Asia.
- In **Sri Lanka**, India is developing **Kankesanthurai Port**, and ferry services to the Indian mainland have been **revived** after decades.

- **Adani Ports** has commenced operations at the **Colombo West International Terminal (CWIT)**—a vital **transshipment hub** for South Asia.

IPGL's Transformation: From Strategy Arm to Global Operator

Emergence of Bharat Global Ports:

The **Ministry of Ports, Shipping and Waterways** is now repositioning **IPGL** from a strategic facilitator to a **commercially driven operator**, capable of managing **domestic and global terminals**. This evolution includes:

- Launching **Bharat Global Ports**, a new **umbrella entity** to serve as a central port infrastructure provider.
- Using IPGL as its **operational arm**, aimed at consolidating India's credibility in **international port operations**.

India's Maritime Ecosystem: A Snapshot:

- **13 Major Ports** and **217 Minor Ports**, governed by central and state bodies respectively.
- **Handles 95%** of India's trade by volume and **70% by value**.
- Port ranking improved from **54th in 2014** to **38th in 2023**, with **9 ports** now in the **top 100 globally**.
- Between **2014-15 and 2023-24**, major ports increased their **cargo-handling capacity by 87.01%**.
- India is the **16th-largest maritime nation**, playing a pivotal role along key **global shipping routes**.

Knowledge Nugget: India's maritime sector contributes significantly to **employment and GDP**, and is a backbone of the country's **Make in India** and **Blue Economy** initiatives.

The Road Ahead: Maritime Power Projection:

India is setting its sights on becoming a **rule-making power** in the global maritime architecture. Its forward-looking approach includes:

- Expanding its fleet with a **new shipping company**, targeting **1,000 ships** within a decade.
- Investing **US$ 82 billion** by 2035 in port modernization and connectivity.
- Deepening engagement across the **Indo-Pacific**, **Central Asia**, and **Africa**, aligning port development with strategic partnerships and **regional infrastructure diplomacy**.

GS Paper 3 – Science & Technology

3 The Future of Retail Scanning: GS1's Next-Gen QR Codes to Go Global by 2027

Context: In a landmark announcement, **GS1**, the global organization behind the original barcode, has declared that its **next generation of QR codes** will become the **global retail standard by 2027**. This move marks a significant shift in how products are scanned, tracked, and authenticated across the world.

What is GS1?

GS1 (Global Standards One) is a **non-profit international body** that creates globally recognized **data standards** used across industries to improve **product identification**, **supply chain efficiency**, and **consumer trust**.

- Founded nearly **50 years ago**, GS1 introduced the **barcode** that revolutionized global retail.
- Today, GS1 operates in **over 100 countries**, including **GS1 India**, where it helps manufacturers, retailers, and consumers connect more effectively through standardized data.

What's Changing with the New QR Codes?

The **next-generation QR codes** will go far beyond traditional barcodes in both function and form. Here's what sets them apart:

- **Higher Data Capacity**: These new QR codes can carry **much more information**, enabling **real-time inventory tracking**, **enhanced product traceability**, and **authenticity verification**.
- **Greater Consumer Transparency**: Shoppers will be able to scan a product and instantly access details such as **origin**, **ingredients**, **sustainability practices**, and **certifications**.
- **Improved Product Safety**: These QR codes can link to **dynamic databases**, offering up-to-date recall alerts or expiration notices.

Phased Rollout Strategy:

- **Dual Labeling (Transitional Phase)**: Both **traditional 1D barcodes** and **new QR codes** will appear side-by-side on packaging to accommodate existing **Point-of-Sale (POS) systems**.
- **Full Adoption (Post-2027)**: As global retail infrastructure upgrades, the **QR code will become the sole scanning standard**, retiring the decades-old linear barcode.

Understanding the Technology: Barcode vs QR Code

What is a Barcode?

A **barcode** is a **machine-readable visual code** made up of vertical lines (1D) or a grid of squares (2D), used to **identify products** or items quickly and accurately.

- Introduced in **1973** by **George Laurer** and **Norman Joseph Woodland**.
- Known commonly as the **Universal Product Code (UPC)**.
- Primarily used in **supermarkets**, **logistics**, and **medical records**.

What is a QR Code?

A **QR Code (Quick Response Code)** is a type of **2D barcode** that stores information in **both horizontal and vertical dimensions**, making it capable of holding **hundreds of times more data** than a traditional barcode.

- Developed in **1994** by Japanese engineer **Masahiro Hara**.

- Widely adopted in **UPI payments**, **ticketing**, **e-commerce**, and **product authentication**.

Bonus Insight: In Japan, QR codes are so integrated into daily life that they are now used on **tombstones**, linking to online memorials.

Why This Matters: Benefits for Retailers, Manufacturers, and Consumers

- **Retailers** gain improved **inventory control** and **supply chain visibility**.
- **Manufacturers** can offer **traceability** and protect against **counterfeiting**.
- **Consumers** benefit from **product transparency**, **ethical sourcing info**, and **easy returns or recalls**.

Global Impact and India's Role:

- India, through **GS1 India**, is expected to play a pivotal role in the adoption of this new technology, especially with the growth of **digital retail** and **e-commerce**.

The move supports India's goals under the **Digital India** and **Smart Logistics** initiatives.

Conclusion: A Smarter Scan for a Smarter World

The shift to **GS1's next-gen QR codes** signals the dawn of **intelligent packaging** and **data-rich commerce**. With implementation targeted by **2027**, businesses and governments worldwide are gearing up to transition into a new standard of **connected retail**, where every scan tells a richer story.

GS Paper 1 – Geography

4 Udanti Sitanadi Tiger Reserve Shows New Signs of Life

Context: In a heartening development, **recent camera trap images** from **Udanti Sitanadi Tiger Reserve (USTR)** in Chhattisgarh have captured a **renewed vibrancy in wildlife activity**. The footage reveals the **extensive presence of carnivores, herbivores, and omnivores**, showcasing the reserve's critical role as a thriving **biodiversity hotspot** in central India.

Where Nature Meets Strategy: About Udanti Sitanadi Tiger Reserve

Located across the **Gariaband** and **Dhamtari districts** of Chhattisgarh, the **Udanti Sitanadi Tiger Reserve** was established by combining two ecologically significant areas—**Udanti and Sitanadi Wildlife Sanctuaries**.

- **Total Area**: **1,872 sq. km**
- The reserve is strategically positioned to form a **vital forest corridor**, connecting with the **Kanker** and **North Kondagaon** forest divisions, and extending toward the **Indravati Tiger Reserve** in the **Bastar** region. This makes it crucial for **wildlife migration** and **genetic diversity**, especially for large carnivores like the tiger.

Rivers and Ridges: The Reserve's Unique Landscape

The reserve's landscape is sculpted by a **complex river system**, with the **Mahanadi River** being the principal waterway. Its key tributaries—**Udanti, Sitanadi, Indravan**, and **Pairi**—nurture the forest ecosystem and provide essential water sources for wildlife.

Topography at a Glance:

- **Number of Named Mountains**: **19**
- **Highest Peak**: **Deo Dongri**
- **Most Prominent Mountain**: **Atānga Dongar**

This mix of **rivers, hills, and forest cover** makes USTR a diverse and resilient ecosystem, supporting a rich range of flora and fauna.

Lush and Layered: Forest Types and Flora

The reserve features two major forest types, as per **Champion & Seth (1968)** classification:

- **Tropical Peninsular Sal Forest**
- **Southern Tropical Dry Deciduous Mixed Forest**

The ground is layered with **grasses, saplings, bushes**, and **shrubs**, creating a **multi-tiered vegetation structure** that supports various life forms, from **insects and reptiles to large herbivores and predators**.

Wildlife Wonders: Rare and Endangered Fauna

Apart from being a tiger stronghold, USTR plays a **critical conservation role** for several **endangered and elusive species**:

- **Bengal Tiger**
- **Wild Buffalo** – USTR, along with **Indravati Tiger Reserve**, shelters one of the **last surviving populations** of this **highly endangered species**.
- **Indian Wolf**
- **Leopard**

- **Sloth Bear**
- **Mouse Deer** (Indian Chevrotain)

Conservation Fact: The **Wild Water Buffalo (Bubalus arnee)** is the **State Animal of Chhattisgarh**, making its protection in USTR a matter of both ecological and cultural significance.

Why USTR Matters: Beyond Biodiversity

- **Ecological Connectivity**: Serves as a **key linkage** between **tiger habitats** in central and eastern India.
- **Climate Resilience**: Forests like USTR act as **carbon sinks**, aiding climate mitigation efforts.
- **Cultural Value**: The region is home to several **tribal communities**, for whom the forest is a source of **livelihood and spiritual connection**.

Tourism Potential: With proper planning, the reserve could become a **model for sustainable ecotourism**, balancing conservation with community development.

Conclusion: A Reserve on the Rise

The recent wildlife sightings in **Udanti Sitanadi Tiger Reserve** are not just ecological milestones—they are **symbols of hope**. As India continues to strengthen its conservation policies and restore wildlife habitats, reserves like USTR demonstrate how **science-based management, community engagement, and ecological awareness** can together revive even the most threatened ecosystems.

GS Paper 3 – Environment and Ecology

5 Yala Glacier Declared "Dead": A Stark Reminder of Climate Crisis in the Himalayas

Context: In a powerful moment of environmental reckoning, **Nepal's Yala Glacier**, nestled in the **Langtang Valley**, has been officially declared **"dead"** by the **International Centre for Integrated Mountain Development (ICIMOD)**. The announcement was marked with a solemn **climate memorial ceremony**, acknowledging the **rapid retreat of Himalayan glaciers** under the weight of global warming.

Why Yala Glacier Matters: A Symbol of Himalayan Vulnerability

The **Yala Glacier**, located in the **Hindu Kush Himalayan (HKH) region**, has undergone **a dramatic 66% reduction** in its ice mass since the 1970s. Now motionless and without internal ice flow, it has earned the grim status of being the **first glacier in Nepal—and in Asia—officially declared "dead."**

- A **commemorative plaque**, engraved in **English, Nepali, and Tibetan**, now marks the site.
- The ceremony was part of Nepal's broader initiative under the **UN International Year for Glaciers Preservation 2025** and coincided with the **inaugural Sagarmatha Sambad (mountain dialogue) Summit**—an international platform for mountain and climate diplomacy.

Did You Know? Glaciers are considered "dead" when they **stop moving under their own weight**, signaling the end of their natural ice cycle.

What Are Glaciers and Why Are They Disappearing?

Understanding Glaciers:

A **glacier** is a **massive, persistent body of ice and debris** that forms on land and flows slowly downhill due to **gravity**. These frozen reservoirs play a vital role in **regulating water supplies**, maintaining **ecosystem balance**, and supporting **millions of livelihoods**, especially in high mountain regions.

Global Glacier Distribution:

- **Antarctica**: **~91%** of the world's glacier ice
- **Greenland**: **~8%**
- The remaining **<1%** is spread across **Asia, Europe, North America, Africa, New Zealand**, and **Indonesia**
- **Australia** has **no glaciers**

The **Hindu Kush Himalayas** alone provide **freshwater to nearly 2 billion people** across Asia through major rivers like the Ganga, Brahmaputra, and Indus.

Climate Change and Glacier Melting: A Global Wake-Up Call

Between **2000 and 2023**, global glaciers have collectively lost a staggering **6,542 billion tons of ice**, directly contributing to:

- A **global sea level rise of 18 millimeters**
- Increased flood risk for **200,000–300,000 additional people** per millimeter of rise

Glacier melt is now the **second-largest cause of sea level rise**, trailing only behind **thermal expansion caused by ocean warming**.

Additional Insight: If current warming trends continue, **two-thirds of Himalayan glaciers** could disappear by **2100**, posing a severe risk to regional water security.

The Himalayan Cryosphere in Crisis:

The **Himalayas**, often called the **"Third Pole"**, are home to the **largest volume of ice outside the Arctic and Antarctic**. However, rising global temperatures—especially in high-altitude regions—are **accelerating glacial retreat at alarming rates**.

Nepal, at the frontline of this crisis, is using platforms like **Sagarmatha Sambad 2025** to call for **global climate solidarity** and **urgent emission reductions**.

Conclusion: Yala Glacier's Silence Speaks Volumes

The declaration of **Yala Glacier's death** is more than a scientific classification—it is a **poignant climate warning**. It tells a story of **neglect, delay**, and the **heavy cost of inaction**. As ice continues to vanish from the world's highest mountains, the time to act is now.

6 Argentina in Focus: A Land of Natural Wonders and Strategic Geography

Context: Argentina, the second-largest country in South America, is a land of **geographical diversity, ecological significance**, and increasing global importance. From its snow-capped **Andean peaks** to its fertile **Pampas plains**, Argentina combines natural beauty with geopolitical relevance.

The White Giant Under Threat: Perito Moreno Glacier

One of Argentina's most iconic landmarks, the **Perito Moreno Glacier**, also known as the **"White Giant"**, is located in the **Los Glaciares National Park**, a **UNESCO World Heritage Site** in **Patagonia**.

- The glacier is currently experiencing **ice loss due to calving**, a process where chunks of ice break off from the edge.
- Despite being one of the few glaciers globally that has remained relatively stable, climate change is now putting its future at risk.

Political Geography: Strategic Location in Southern South America

- **Capital**: **Buenos Aires**
- **Boundaries**:
  - **West**: **Chile**
  - **North**: **Bolivia, Paraguay, Brazil**, and **Uruguay**
  - **East**: Bordered by the **Atlantic Ocean**
- The **Argentina–Chile international boundary** is the **third-longest land border** in the world, after those of **USA–Canada** and **Russia–Kazakhstan**.
- **Ushuaia**, a city in southern Argentina, is considered the **southernmost city on Earth**, making it a gateway to Antarctica.

Geographical Features: From Peaks to Plains

Argentina's terrain is shaped by a dramatic variety of landscapes:

- **The Andes Mountains** in the west, home to **Cerro Aconcagua** (**6,960 m**), the **highest peak in South America**.
- **The Pampas**, vast treeless grasslands, are the **agricultural heartland** of Argentina, producing wheat, corn, and beef.
- **Patagonia Plateau** in the south features arid steppes, glacial lakes, and subantarctic environments.

Climate Zones:

- **Temperate** in most regions
- **Arid and semi-arid** in the southeast
- **Subantarctic** in the far southwest

Insight: Argentina's climatic diversity allows it to host ecosystems ranging from **tropical forests in the north** to **glacial zones in the south**.

Economic Relevance: A Lithium Powerhouse

Argentina is rapidly gaining attention for its **strategic mineral resources**, particularly **lithium**, a key component in batteries for electric vehicles and renewable energy storage.

- **3rd in the world** in **lithium reserves**
- **4th in global lithium production**
- Part of the **"Lithium Triangle"**, along with **Bolivia and Chile**, which holds over 50% of the world's lithium reserves

Global Relevance: With the rise of clean energy technologies, Argentina is poised to play a **critical role in the global energy transition**.

Rivers and Water Systems:

- The **Río de la Plata**, formed by the confluence of the **Paraná and Uruguay Rivers**, is one of South America's most important estuaries.
- These rivers support **transport, trade**, and **hydroelectric energy production**, and are crucial for **agriculture and urban development**.

Conclusion: Argentina – A Nation of Geographical Majesty and Strategic Significance

With its breathtaking natural landscapes, vital mineral resources, and important geopolitical location, **Argentina stands as a crucial player** in environmental, economic, and strategic affairs. Whether it's the **melting glaciers of Patagonia**, the **agricultural richness of the Pampas**, or its **emerging lithium economy**, Argentina offers a compelling case for **global attention and climate action**.