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21 AUGUST 2025

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Daily News Analysis

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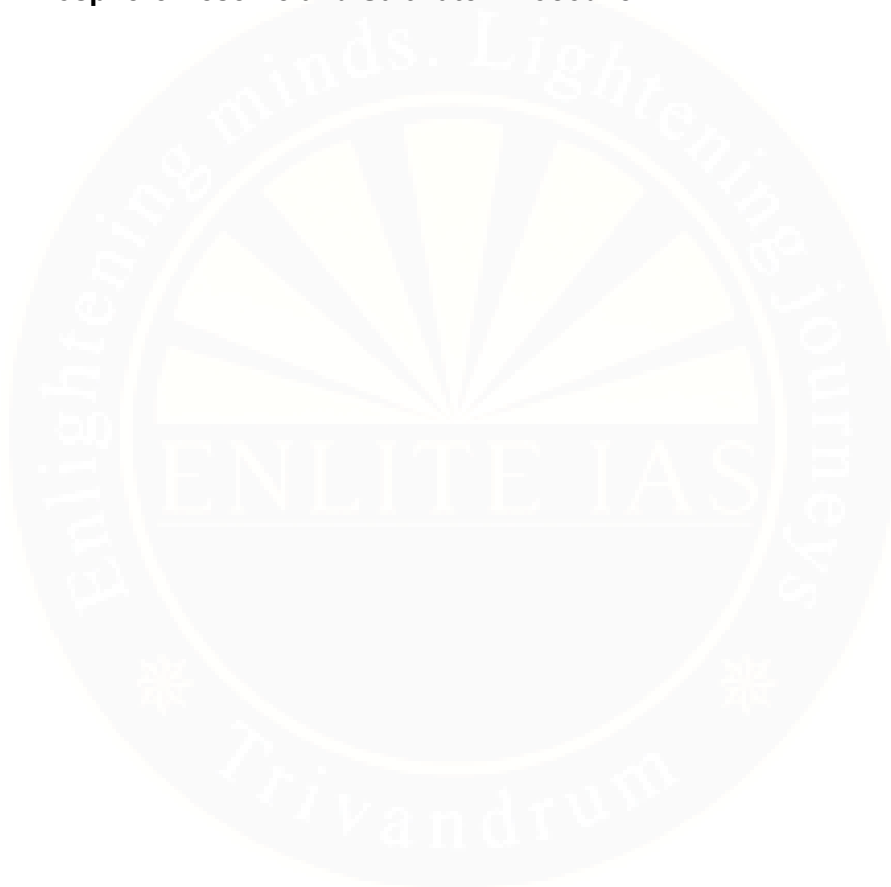
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THURSDAY, 21st AUGUST 2025

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1. Agni - 5

- Prelims - Agni-5
- Mains - GS 3 - Science and Technology

Why in the news?

- India Successfully test fired Agni-5 missile from the Integrated Test Range at Chandipur, Odisha.

Agni - 5

- **What is it?:** Agni-5 is an **Intercontinental ballistic missile (ICBM)**
- **Developed by:** Defence Research and Development Organisation (DRDO).
- **Features:**
 - **Type:** Surface-to-surface nuclear-capable ballistic missile.
 - **Range:** ~5,000–5,500 km (covers entire Asia, parts of Europe & Africa).
 - **Length:** ~17 meters; Diameter: 2 meters.
 - **Weight:** ~50 tonnes.
 - **Warhead:** Nuclear (1.5-ton payload capacity).
 - **Propulsion:** Three-stage, solid-fueled rocket motors.
 - **Guidance System:** Advanced navigation with **Ring Laser Gyroscope (RLG)** and accelerometers, ensuring high accuracy.
 - **Launch Mode:** Canisterized, road-mobile launcher – quick deployment, easy storage, improved survivability.



2. International Solar Alliance (ISA)

- **Prelims** - International Solar Alliance
- **Mains** - GS 3 - Environment

Why in the news?

- ISA chief announced that by the end of the year, the International Solar Alliance (ISA) will set up 17 centers of excellence in as many countries, and going ahead, establish a Global Capability Centre (GCC) in India, akin to a “Silicon Valley for solar”.

International Solar Alliance (ISA)

- **Launched**: In 2015 at COP-21, Paris by India and France.
- **Headquarters**: Gurugram, Haryana, India.
- **Aim**: Promote the large-scale deployment of solar energy and reduce dependence on fossil fuels.
- **Nature**: The International Solar Alliance (ISA) is a treaty-based intergovernmental organization.
- **Membership**: Open to all UN member states (initially limited to countries lying between Tropic of Cancer and Tropic of Capricorn).
- **Objective**
 - Mobilize over \$1 trillion in investments by 2030 for solar energy.
 - Facilitate affordable finance and technology transfer.
 - Reduce cost of solar power generation and applications (agriculture, health, transport).
 - Support countries in meeting their Nationally Determined Contributions (NDCs) under the Paris Agreement.
- **Initiatives**
 - **One Sun, One World, One Grid (OSOWOG)**: A global solar power grid initiative for cross-border transfer of renewable energy.
 - **STAR-C (Solar Technology and Application Resource Centre)**: Capacity-building, research, and training hub for member countries.
 - **Scaling Solar Applications for Agriculture (SSA)**: Promotes solar pumps and technologies for irrigation.



>> Kozhikode

>> Ernakulam

>> Thiruvananthapuram

- **Affordable Finance at Scale (AFS):** Attracts global investment and concessional finance for solar projects.
- **ISA Solar Awards:** To recognize innovative solar solutions in member countries.
- **Challenges**
 - Unequal capacity and interest among member countries.
 - **Financing gaps** and high-risk perception in developing nations.
 - Need for **technological adaptation** to diverse geographic conditions.
 - Coordination difficulties in mega projects like OSOWOG.
- **Significance for India**
 - Positions India as a **global leader** in renewable energy diplomacy.
 - Supports India's **targets of 500 GW renewable energy capacity by 2030.**
 - Enhances **South-South cooperation** and climate leadership.
 - Strengthens India's role in global climate negotiations.



3. Eurasian Economic Union (EAEU)

- **Prelims** - Eurasian Economic Union (EAEU)
- **Mains** - GS 2 - International Relations

Why in the news?

- India and the Eurasian Economic Union (EAEU), signed the Terms of Reference (ToR) to begin negotiations on a Free Trade Agreement (FTA).

Eurasian Economic Union (EAEU)

- **What is it?:** The Eurasian Economic Union (EAEU) is an economic union established to promote economic integration and cooperation among member states, primarily focusing on Russia, Kazakhstan, Belarus, Armenia, and Kyrgyzstan.
- **Launch:** 2015
- **Aim:** To create a common market similar to the European Union, facilitating the free movement of goods, services, capital, and labor among its members, while promoting economic stability, shared infrastructure, and a unified regulatory framework.
- **Objectives**
 - **Economic Integration:** Develops a single economic space among member states, fostering closer economic ties and harmonizing economic policies.
 - **Free Movement:** Allows the free flow of goods, services, capital, and labor to support seamless trade and employment across member states.
 - **Unified Regulations:** Establishes common regulations in areas like customs, competition, and technical standards to simplify business and trade within the region.
- **India and EAEU:**
 - **Trade Opportunities:** An India-EAEU Free Trade Agreement (FTA) could open new trade routes and markets for Indian goods, especially in pharmaceuticals, agriculture, and information technology.
 - **Energy Security:** India could gain easier access to EAEU's vast energy resources, including oil and natural gas from Russia and Kazakhstan, enhancing India's energy security.
 - **Connectivity Initiatives:** India aims to improve connectivity with the EAEU through the International North-South Transport Corridor (INSTC), enhancing trade efficiency.



4. International Criminal Court (ICC)

- **Prelims** - International Criminal Court (ICC)
- **Mains** - GS 2 - International Relations

International Criminal Court (ICC)



Why in the news?

- U.S. expands sanctions on officials of International Criminal Court.

International Criminal Court (ICC)

- **What is it?:** The International Criminal Court (ICC) is an intergovernmental organisation and international tribunal.
- **Formation**
 - It is the first international criminal court that is permanently established.
 - The Rome Statute, which served as its foundation document, became effective on July 1, 2002.
- **Headquartered:** Hague, Netherland
- **What they do?:** It looks into and prosecutes those accused of heinous offences such as genocide, crimes against humanity, war crimes, and acts of aggression.
- **Status of India:** India not member.



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5. Quantum Mechanics and General Relativity

- **Prelims** - Quantum Mechanics and General Relativity
- **Mains** - GS 3 - Science and Technology

Why in the news?

- Scientists in the U.S. are setting up a new experimental design that could let scientists test ideas at the intersection of quantum theory and general relativity.

Quantum Mechanics

- **What is it?:**
 - It is the branch of physics that explains how **sub-atomic particles**, like electrons and photons, can behave **both as particles and waves**.
 - It is also known as Wave-particle duality, a fundamental principle of quantum physics.
- **Key Principles:**
 - Particles can behave both as waves and particles - **Wave-Particle duality**.
 - A particle can exist in multiple states until measured - **Superposition**.
 - Two particles are related such that estimating one would give the details about the other - **Entanglement**.
 - The position and momentum of a particle can not be determined simultaneously - **Uncertainty principle**.

General Relativity

- **What is it?:**
 - It is the **modern theory of gravity** proposed by Albert Einstein as an extension to Newtonian Law of Gravity.
 - It describes gravity as the curvature of **space-time fabric** caused by mass and energy rather than the conventional force concept.
- **Key Principles:**
 - Massive objects like the stars are bending the space-time fabric, causing planets to orbit them - **Space-Time curvature**.
 - Time moves slower in stronger gravitational fields like that of a black hole - **Time dilation**.



→ In a closed system, acceleration and gravitational forces are indistinguishable
- **Equivalence Principle.**

Quantum-Gravity Interface

- Researchers propose using a network of entangled atomic clocks -placed kilometers apart- to probe how quantum theory and general relativity interact in a tangible way.
 - Entangle optical atomic clocks via a quantum network and place them at different gravitational potentials.
- Entangled clocks experience different proper times because of their distinct gravitational environments.
- When recombined and interfered, their collective quantum behavior encodes information about how time -and by extension, gravity- is affected by quantum superposition.
- This enables experimental tests of quantum theory in curved spacetime, potentially challenging or affirming foundational principles like unitarity, linearity, and the Born rule in this regime.



6. Sundarban Biosphere Reserve and Saltwater Crocodile

- **Prelims** - Sundarban Biosphere Reserve and Saltwater Crocodile
- **Mains** - GS 3 - Environment

Sundarban Biosphere Reserve



Why in the news?

- Estimated population of saltwater crocodiles has shown an uptick in the Sundarban Biosphere reserve compared to last year.

Sundarban Biosphere Reserve

- **Location:** On the delta of the Ganga, Brahmaputra and Meghna rivers in the Bay of Bengal.
- **Include:** This Biosphere Reserve includes Sundarban Tiger Reserve, Sundarban National Park (core area), Halliday Island and Lothian Island Wildlife Sanctuaries with Sajnakhali Wildlife Sanctuary forming its buffer area.
- **Protection:** It is designated as a UNESCO World Heritage site.
- **Flora:** The vegetation of the area is moist tropical forests, tidal forests and mangroves.
- **Fauna:** It is home to Royal Bengal Tiger, Estuarine Crocodile, Gangetic Dolphin, Water Monitor Lizard etc.



Do You Know?

- It is a transboundary delta and mangrove forest lie between Indian and Bangladesh.
- Protection Status Alloted to Sundarbans
 - Ramsar Site
 - Tiger Reserve
 - National Park
 - UNESCO World Heritage Site

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Saltwater Crocodile



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Why in news?

- Estimated Population of Saltwater crocodiles has shown uptick in the Sundarban Biosphere Reserve compared to last year.

Saltwater Crocodile

- Features:**
 - Largest of all Crocodilians.
 - It is also called the 'estuarine crocodile' and as the name suggests, is typically found in the brackish water of estuaries.
 - It can also tolerate saltwater in the oceans and can travel long distances over the open ocean, making use of tidal currents.
- Habitat:**
 - In India - Sundarbans, Bhitarkanika National Park and the Andaman and Nicobar Islands.
 - Around the World - Bangladesh, Malaysia, Indonesia, Brunei, the Philippines, Papua New Guinea, Australia and the Solomon Islands.
 - Mangrove forests and Coastal habitats are inhabited.



- Threats:** Habitat destruction, fragmentation, and transformation, fishing activities and use of crocodile parts for medicinal purposes.
- Protection Status:**
 - IUCN List of Threatened Species: Least Concern**
 - CITES: Appendix I** (except the populations of Australia, Indonesia and Papua New Guinea, which are included in Appendix II).
 - Wildlife Protection Act, 1972: Schedule I**