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Regenerative Braking

Context: Electric vehicles benefit from state-led incentives and subsidies, with regenerative braking enhancing their energy efficiency significantly.

➤ Braking Mechanisms:

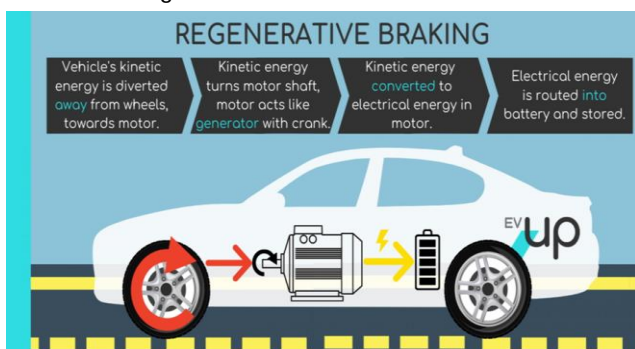
- Braking slows down a vehicle by reducing its kinetic energy, crucial for safe operation.
- Disc brakes use friction: brake pads press against a rotating disc, converting kinetic energy into heat through friction.
- Induction brakes utilize magnets and electric currents in conductive materials to generate resistance, slowing down the vehicle.

➤ Regenerative Braking:

- Designed for electric vehicles to reclaim kinetic energy during braking.
- Operates by converting the vehicle's kinetic energy into electrical energy using the traction motor acting as a generator.
- This electrical energy can be stored in batteries or fed back into the vehicle's electrical system for later use, enhancing overall efficiency.

➤ Motor as a Generator:

- Electric motors and generators are fundamentally similar, differing mainly in their operational mode.
- Motors convert electrical energy into mechanical energy to propel the vehicle.
- Generators reverse this process: external mechanical energy (from braking or other sources) spins the rotor, inducing electrical current in the stator.



➤ Downsides of Regenerative Braking:

- Limited effectiveness at very low speeds or during emergency stops, requiring supplementary braking systems.
- Inadequate for preventing vehicle rollback on steep inclines without additional mechanisms.
- Efficiency decreases as vehicle speed decreases, impacting energy recovery in stop-and-go traffic.

➤ Other Energy Recovery Methods:

- **Flywheels store rotational energy:** spinning rapidly to store and release energy quickly, useful in high-performance applications like Formula One.
- Air compression systems use recovered energy to compress air, which can be used to start internal combustion engines or other pneumatic devices.

Regulatory framework for broadcasting and cable services and releases

Context: TRAI has issued amendments to the regulatory framework governing broadcasting and cable services and has made them publicly available.

➤ Overview:

- TRAI has issued several amendments to regulatory frameworks governing broadcasting and cable services.
- **These include:**
 - Telecommunication (Broadcasting and Cable) Services (Eighth) (Addressable Systems) Tariff (Fourth Amendment) Order, 2024
 - Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Sixth Amendment) Regulations, 2024
 - Telecommunication (Broadcasting and Cable) Services Standards of Quality of Service and Consumer Protection (Addressable Systems) (Fourth Amendment) Regulations, 2024
 - Recommendations to Ministry of Information and Broadcasting (MIB) on listing channels in Electronic Programme Guide (EPG) and upgrading DD Free Dish to an Addressable System.

➤ Implementation Timeline:

- Most amendments, excluding certain clauses, will take effect 90 days after their publication in the official gazette.

➤ Key Amendments and Objectives:

- **Tariff Order:**
 - Removal of ceilings on Network Capacity Fee (NCF), now under forbearance, allowing market-driven pricing.
 - Increased flexibility for DPOs to offer discounts up to 45% on bouquets.
 - Requirement for broadcasters to declare pay channels available free-to-air on all platforms for fair competition.

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- **Interconnection Regulations:**
 - Simplification of carriage fee regime, making it technology-neutral.
 - Removal of distinctions between HD and SD channels for carriage fee purposes.
- **Quality of Service Regulations:**
 - Forbearance on charges for installation, activation, and other services, ensuring transparency through mandatory publication by DPOs.
 - Simplification of regulatory requirements for small DPOs.

➤ **Recommendations to MIB:**

- **Listing of Channels in EPG:**
 - MIB to require broadcasters to specify primary language and sub-genre of channels for proper placement in EPG.
- **Upgradation of DD Free Dish:**
 - Proposal to convert DD Free Dish to an addressable system to enhance viewer experience, combat piracy, and facilitate subscriber management.
 - Prasar Bharati to adopt indigenous technologies and promote interoperable Set Top Boxes (STBs) for consumer choice and ecosystem transition.

Biodiversity Beyond National Jurisdiction (BBNJ) Agreement

Context: The Union Cabinet has given its approval for India to sign the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement.

- The BBNJ Agreement, also known as the 'High Seas Treaty', is an international treaty within the framework of UNCLOS.
- Its primary objective is to address concerns regarding the long-term conservation of marine biodiversity in the high seas.
- Marine biodiversity in areas beyond national jurisdiction encompasses over 60% of the world's oceans.
- These areas lack a regulatory framework specifically designed for conservation efforts.
- The treaty establishes precise mechanisms to ensure the sustainable use of marine biological diversity through international cooperation and coordination.

- Parties to the agreement refrain from claiming or exercising sovereign rights over marine resources originating from the high seas and advocate for fair and equitable sharing of benefits.
- It adopts an inclusive, integrated, ecosystem-centric approach guided by the precautionary principle, incorporating traditional knowledge and the best available scientific knowledge.
- The agreement aims to minimize impacts on the marine environment by employing area-based management tools and establishing rules for conducting environmental impact assessments.
- Implementation of the BBNJ Agreement is expected to contribute significantly to achieving several Sustainable Development Goals (SDGs), particularly SDG14 (Life Below Water).

➤ **United Nations Convention on the Law of the Sea (UNCLOS)**

- The United Nations Convention on the Law of the Sea (UNCLOS) is an international treaty adopted in 1982 and came into force in 1994.
- It serves as a comprehensive framework governing the use and preservation of the world's oceans. This includes guidelines on maritime boundaries, navigation, resource management, and environmental protection.
- Widely embraced, UNCLOS has been ratified by 168 countries globally, India among them, establishing it as one of the most universally accepted treaties worldwide.
- The treaty acknowledges the rights and responsibilities of coastal states within their maritime zones, including the exclusive economic zone (EEZ) that extends up to 200 nautical miles from a country's coastline.
- UNCLOS forms the legal basis for numerous international agreements concerning oceans, such as the Convention on Biological Diversity (CBD), the International Convention for the Prevention of Pollution from Ships (MARPOL), and the Convention on the Conservation of Antarctic Marine Living Resources.

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NEWS IN BETWEEN THE LINES

National Commission for Minorities

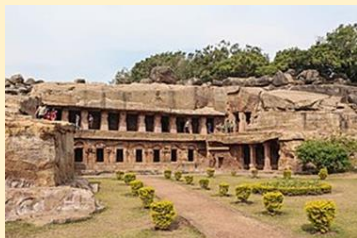


Recently, the National Commission for Minorities held a meeting with representatives from 18 states and Union Territories to discuss the implementation and registration of Sikh marriages under the Anand Marriage Act.

About the National Commission for Minorities:

- The National Commission for Minorities (NCM) is an **autonomous body**.
- It was established by the Indian government in **1992** under the **National Commission for Minorities Act, 1992**.
- Its primary objective is to **safeguard the rights and interests of minorities** in India.
- It advises the Government on issues related to the socio-economic and educational development of minorities.
- It monitors the implementation of various safeguards provided to minorities under the Constitution and laws.
- It **has the powers of a civil court** while investigating complaints, such as summoning witnesses, examining them on oath, and requiring production of documents.
- As per **Section 3 of the NCM Act 1992**, the commission consists of a **Chairperson**, a **Vice-Chairperson** and **five members**, all **nominated by the Central Government** from amongst persons of eminence, ability and integrity.
- Each Member **holds office for a period of three years** from the date of entering the office.

Udayagiri Caves



Recently, the President of India Droupadi Murmu, visited the historic Udayagiri caves in Bhubaneswar, Odisha.

About Udayagiri Caves:

- Udayagiri Caves are situated near Bhubaneswar, the **capital city of Odisha**.
- These caves are renowned for the **Hathigumpha inscription**, written in **Brahmi script**, which chronicles the military exploits of **King Kharavela of Kalinga** (ancient Odisha).
- The caves date back to the **2nd century BCE** and **1st century CE**, showcasing rock-cut architecture and sculptures depicting various religious and secular themes.
- They **contain iconography** related to **Jainism, Hinduism** and **Buddhism**, reflecting the religious diversity and cultural exchanges during ancient times.
- Besides the Hathigumpha inscription, there are several other inscriptions in **Brahmi** and **Prakrit scripts**, providing historical insights into the period.
- Rediscovered in the **19th century** by archaeologists, notably **Alexander Cunningham**, the Udayagiri Caves have contributed significantly to our understanding of ancient Indian art and history.
- The Udayagiri Stupa serves as a reference point for studying **Vajrayana Buddhism**.
- Important antiquities include **Buddha, Tara, Manjusri, Avalokitesvara, Jatamukuta Lokeshvara** and **terracotta seals**.

Leang Karampuang Cave



Recently, the scientists have discovered the world's oldest confidently dated cave painting on the Indonesian island of Sulawesi, specifically in the Leang Karampuang cave in the Maros-Pangkep region of South Sulawesi province.

About Leang Karampuang Cave:

- Leang Karampuang cave is situated in the **Maros-Pangkep region** of South Sulawesi province, **Indonesia**.
- It is the site where the **world's oldest confidently dated cave painting** was discovered, depicting **three human-like figures** interacting with a **wild pig**.
- The cave painting is at **least 51,200 years old**, making it the oldest-known dated example of cave art.
- Scientists used a new scientific approach involving laser dating of **calcium carbonate crystals** that formed naturally over the painting to determine its minimum age.
- The painting is executed in a single shade of **dark red pigment** and **measures 92 cm by 38 cm**.

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Place in News

Russia

Prime Minister Narendra Modi will co-chair the 22nd Annual Summit between India and Russia with Russia President Vladimir Putin in Moscow today, July 9th.

Russia (Capital: Moscow)

Location: Russia, the **largest country** in the world by area and the **world's ninth-most populous** country in the world in term of population, is located in both **Eastern Europe** and **Northern Asia**.

Political Boundaries: Russia shares its borders with **14 countries:** Norway, Finland, Estonia, Latvia, Lithuania, Poland (via Kaliningrad Oblast), Belarus, Ukraine, Georgia, Azerbaijan, Kazakhstan, China, Mongolia, and North Korea.

Physical Features:

- **Mount Elbrus** is the highest mountain in Russia and Europe.
- Russia's major rivers include the **Volga, Ob, Yenisei, Lena** and **Amur**.
- Russia spans **eleven time zones**, from UTC+2 to UTC+12.

Membership: Russia is a member of various international organizations, including the **United Nations (UN)**, the **Shanghai Cooperation Organization (SCO)**, the **Eurasian Economic Union (EAEU)**, the **BRICS group** (Brazil, Russia, India, China, and South Africa) and the **Commonwealth of Independent States (CIS)**.

Political Relations between India and Russia:

- The **India-Russia Intergovernmental Commission (IRIGC)** is divided into two sections: **Trade, Economic, Scientific, Technological** and Cultural Cooperation and **Military & Military-Technical Cooperation**.
- In **2021**, the bilateral cooperation between India and Russia was further strengthened with the initiation of the **first 2+2 Dialogue**, involving the Foreign and Defence Ministers of both countries.



POINTS TO PONDER

- Which state was honored with the Best Agriculture State Award for 2024 by the 15th Agriculture Leadership Awards Committee?
– **Maharashtra**
- Which ministry launched Project PARI (Public Art of India)? – **Ministry of Culture**
- Who won the 2024 Asian Billiards Championship in Riyadh, Saudi Arabia? – **Dhruv Sitwala**
- Where was the Asian Squash Doubles Championship 2024 held? – **Johor, Malaysia**
- Vizhinjam International Seaport, recently in news, is located in which state? – **Kerala**

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