



8 July, 2024

Digital Bharat Nidhi

Context: Department of Telecommunications (DoT) released draft rules to operationalize the Digital Bharat Nidhi, aiming to boost telecom connectivity in rural areas.

➤ Introduction of Digital Bharat Nidhi (DBN)

- DBN replaces the Universal Service Obligation Fund (USOF), funded by a 5% levy on telecom operators' Adjusted Gross Revenue (AGR).
- Aimed at expanding telecom networks in rural and remote areas lacking commercial viability.

➤ Operational Mechanism of Digital Bharat Nidhi

- Contributions from telecom companies are first deposited into the Consolidated Fund of India (CFI).
- Funds are then allocated to DBN periodically for:
- Promoting access to telecom services in underserved areas.
- Funding research, development, and pilot projects in telecom.
- Enhancing connectivity through consultancy and advisory support.

➤ Administration and Implementation

- An administrator appointed by the Centre selects DBN implementers through bidding or applications.
- Funding modalities include full, partial, co-funding, risk mitigation, and capital support.

➤ Focus Areas of Digital Bharat Nidhi

- Targets underserved groups such as women, persons with disabilities, and economically weaker sections.
- Emphasizes next-generation telecom technologies and affordability improvements in rural and remote areas.
- Supports innovation, indigenous technology development, and regulatory sandboxes.

➤ Operational Guidelines and Accountability

- DBN implementers must share and provide open, non-discriminatory access to telecom networks and services.
- Compliance with guidelines issued by the administrator for network establishment and service delivery.

➤ Underutilization of USOF

- Criticisms of USOF include significant underutilization since its inception in 2003.
- Data indicates that only 72% of collected funds were utilized from 2017 to 2022, with several years showing substantial budgetary gaps.
- Reasons include underspending on projects like BharatNet, aimed at rural fiber connectivity.

➤ Universal Service Obligation Fund (USOF)

- Established through an amendment to the Indian Telegraph Act, 1885, the Universal Service Obligation Fund (USOF) came into existence in December 2003 by an Act of Parliament.
- The primary objective of USOF is to ensure equitable access to telecom services in rural and remote areas, aiming to reduce the digital divide between urban and rural regions.

- USOF provides subsidy support, known as Net Cost or Viability Gap Funding (VGF), to encourage telecom service providers to expand their services in commercially non-viable rural and remote areas.
- **Funding Mechanism:**
- USOF is financed through a Universal Service Levy (USL) imposed on the telecom operators' gross revenue, calculated as a percentage of their Adjusted Gross Revenue (AGR).
- The collected levy is deposited into the USOF to fund its operations.
- **Administration:**
- The Administrator of the USOF is appointed by the Central Government to oversee the administration of the fund.
- USOF functions as an attached office under the Department of Telecommunications (DoT), Ministry of Communications, India.

Responsible quantum technologies

Context: The United Nations has designated 2025 as the International Year of Quantum Science and Technology (IYQ).

➤ International Year of Quantum Science and Technology (IYQ)

- The United Nations has designated 2025 as the IYQ to promote awareness and exploration of quantum science and technology globally.

➤ Current State of Quantum Science and Technology (S&T)

- Quantum S&T, including quantum computing, sensors, and communications, is advancing worldwide but has not gained public attention like AI or genome editing.
- Significant investments by governments and private sectors, with estimates suggesting potential value of \$1.3 trillion across sectors by 2035.
- Potential dual-use applications raise concerns about digital security and misuse.

➤ Responsible Development of Quantum S&T

- Governments and institutions advocate for responsible quantum technologies to balance innovation with public trust.
- Initiatives like the UK's 'National Quantum Strategy' emphasize regulatory frameworks to ensure responsible innovation and economic growth.

➤ Quantum Governance

- The World Economic Forum's 'Quantum Governance' framework promotes transparency, inclusiveness, and ethical considerations in quantum computing development.
- Focus on building trust and addressing potential risks proactively through collaboration among stakeholders.

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➤ Industry Perspective and Ethical Considerations

- Companies like IBM commit to developing quantum technologies responsibly, barring their use in harmful applications and promoting diversity in quantum communities.
- Challenges highlighted include ethical gaps and disparities in global quantum capacities, impacting ethical standards and public engagement.

➤ National Policies and Intellectual Property

- National strategies, such as the U.S. National Quantum Strategy, prioritize intellectual property protection and security in quantum research and development.
- Tensions exist between private sector profit motives and the call for openness and responsible innovation in quantum technologies.

➤ Frameworks for Responsible Quantum Technologies

- Academic proposals and frameworks emphasize principles like responsible research and innovation (RRI), promoting anticipation, reflection, diversity, and public engagement in quantum S&T.

➤ Impact of Policy Frameworks

- Limited case studies highlight the need for more nuanced policy frameworks embedding responsible innovation in quantum S&T.
- Despite challenges, global interest persists in developing policies that ensure the ethical advancement of quantum technologies.

➤ Future Directions and Challenges

- Ongoing debates and initiatives underscore the importance of responsible quantum technology development.
- The effectiveness of current engagements in translating into meaningful policies and regulations remains uncertain but crucial for ethical advancements in quantum S&T.

Akash Surface-to-Air Missile (SAM)

Context: Brazil is considering the Indian Akash Surface-to-Air Missile (SAM) system alongside the Chinese Sky Dragon-50 for an order.

➤ Overview of Akash Surface-to-Air Missile (SAM):

- Purpose:** Designed as a Short-Range Surface-to-Air Missile system for defending vulnerable areas from air attacks.
- Origin:** Developed by India's Defence Research and Development Organisation (DRDO) and manufactured by Bharat Dynamics Ltd (BDL) in Hyderabad.
- Capabilities:**
 - Target Engagement:** Capable of neutralizing various aerial threats including fighter jets, cruise missiles, air-to-surface missiles, and ballistic missiles.

- Operational Service:** Currently deployed by the Indian Army and Indian Air Force.

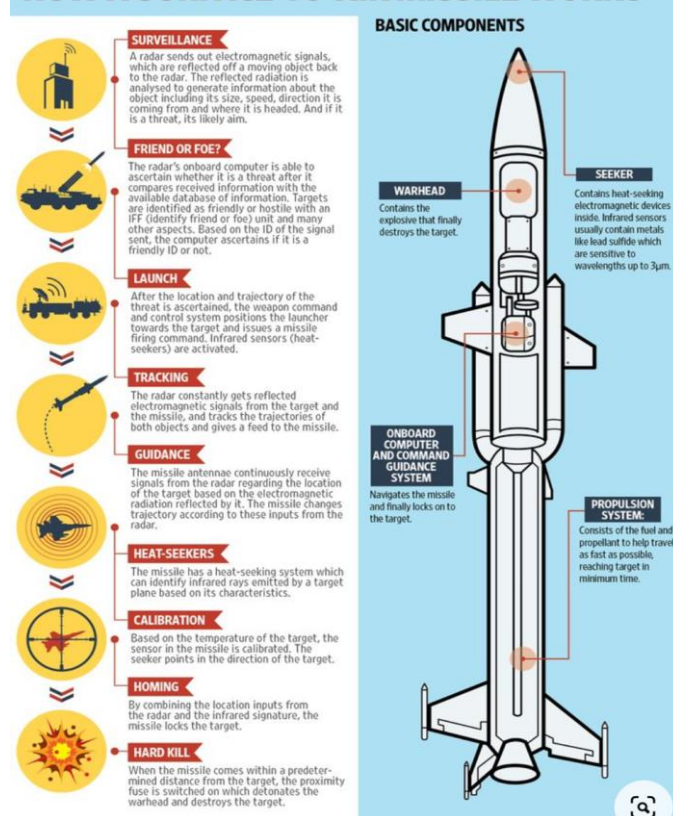
➤ Technical Specifications:

- Dimensions:** 5.8 meters long, 350 mm diameter, and 1,105 mm wingspan.
- Weight:** Launch weight of 720 kg.
- Speed and Altitude:** Flies at speeds up to Mach 2.5 with a height ceiling of 18 km.
- Range:** Can target aircraft up to 45 km away.

➤ Key Features:

- Radar System:** Utilizes the Rajendra phased array radar for tracking and guiding missiles, offering 3D passive electronically scanned array (PESA) capabilities.
- Target Engagement:** Able to engage multiple targets simultaneously in Group Mode or Autonomous Mode.
- Countermeasures:** Equipped with Electronic Counter-Counter Measures (ECCM) capabilities.
- Guidance System:** Uses Command Guidance for accurate targeting.
- Mobility:** Configured on mobile platforms for rapid deployment.
- Adaptability:** Features an open-system architecture for integration into current and future air defense environments.

HOW A SURFACE-TO-AIR MISSILE WORKS



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NEWS IN BETWEEN THE LINES

SEBI



Recently, the Securities and Exchange Board of India (SEBI) has issued a consultation paper on the treatment of interest income earned by the clearing corporations from cash collaterals from clearing members and upstreamed client funds.

About the Securities and Exchange Board of India:

- The Securities and Exchange Board of India (SEBI) is the **regulatory body** for the **securities and commodity markets** in India under the jurisdiction of the **Ministry of Finance**, Government of India.
- **Established on April 12, 1988**, SEBI was initially a **non-statutory body**, but it gained **statutory status on January 30, 1992**, through the **SEBI Act, 1992**.
- It is a **quasi-legislative** and **quasi-judicial body** which can **draft regulations**, conduct **inquiries**, **pass rulings** and **impose penalties**.
- SEBI functions to meet the needs of issuers by providing a **marketplace to raise finance**, investors by ensuring safety and accurate information and intermediaries by fostering a competitive professional market.
- It is **headed by a Chairman, appointed by the Central Government** and includes members from various sectors including the Ministry of Finance and the Reserve Bank of India, along with experts in the field.
- It is a **member of the International Organization of Securities Commissions (IOSCO)**.

Ashadhi Bij



Recently, the Prime Minister of India has greeted the people on the special occasion of Ashadhi Bij, the Kutchi New Year.

About Ashadhi Bij:

- Ashadhi Bij falls on the **second day of the Shukla Paksha** (waxing phase of the moon) in the month of **Ashadha**, according to the **Hindu calendar**.
- This usually corresponds to **June or July in the Gregorian calendar**.
- It marks the beginning of the rainy season, which is crucial for the **agrarian and Kutchi communities** in the **Kutch region of Gujarat**.
- Farmers in Gujarat observe this day to predict the monsoon patterns and prepare for the agricultural season.
- Farmers start preparing their fields for **sowing crops** based on the predictions made on **Ashadhi Bij**.
- The festival underscores the close relationship between the **environment and agricultural** practices in Gujarat.
- Traditional New Year festivals in India include **Chaitra Shukla Pratipada, Gudi Padwa, Ugadi, Navreh, Sajibu Cheiraoba, Cheti Chand, Bihu** (Rongali, Kongali, Bhogali), **Baisakhi** and **Losoong** (Namsoong).

Pangong Tso Lake



Recently, citing reports of a Chinese military base near Ladakh's Pangong Tso Lake, Congress president criticized the BJP government for lack of transparency on the border situation with China.

About Pangong Tso Lake:

- Pangong Tso lake, also known as Pangong Lake is a **high-altitude lake** situated at an elevation of about 4,350 meters (14,270 feet) in the Himalayas.
- It **extends from India to China**, with **two-thirds** of the lake lying in **Tibet (China)** and **one-third in Ladakh (India)**.
- It is one of the **largest brackish lakes in Asia**, spanning approximately 134 kilometers (83 miles) in length.
- The lake is **relatively shallow**, with an average depth of around 50 meters (164 feet).
- Pangong Tso is the world's highest saltwater lake, but it **freezes completely during the winter** months despite its high salinity.
- Pangong Tso gained international attention due to border disputes between India and China.
- The **Line of Actual Control (LAC)** passes through the lake, leading to occasional tensions.
- The **2020 India-China standoff** at Pangong Tso highlighted its strategic importance in the region.

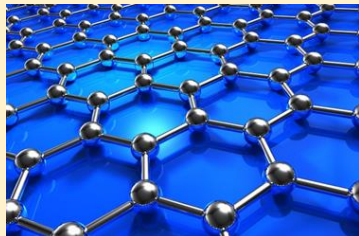
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Graphene



About Graphene:

- Graphene is a thin **2D structure made of carbon atoms** and has **excellent thermal** and electrical conductivity with a wide range of applications.
- It is an **allotrope of carbon** consisting of a **single layer of carbon atoms** arranged in a **hexagonal lattice pattern** (honeycomb structure).
- It is one of the **thinnest, strongest** materials known to humankind.
- It possesses unparalleled properties: **stronger than steel and diamond, highly conductive surpassing copper and silver**, extremely flexible and stretchable and remarkably lightweight yet durable.
- It has applications in **electronics, materials science, energy storage and conversion**, and **medicine**, due to its high electrical conductivity, strength in composites, energy storage capabilities and biocompatibility for biomedical devices.
- Production Methods include the **Scotch Tape Method** for mechanical exfoliation of graphite layers, **Chemical Vapor Deposition (CVD)** for large-area graphene films and ongoing advancements in scalable techniques.
- Graphene oxide is the **oxidized form of graphene**, which can be prepared easily compared to graphene.

Place in News

Austria

Prime Minister of India will embark on a three-day official visit to Russia and Austria today, July 8. In the first leg of his visit, he will be in Moscow for the 22nd Annual Summit between India and Russia.

Austria (Capital: Vienna)

Location: Austria is a **landlocked country** located in Central Europe.

Political Boundaries: Austria shares its borders with **Hungary** (East), **Switzerland** and **Liechtenstein** (West), the **Czech Republic** (North), **Slovakia** (Northeast), **Germany** (Northwest) and **Slovenia** and **Italy** (South).

Physical Features:

- The highest point in Austria is the **Grossglockner**, which is part of the Hohe Tauern mountain range in the Austrian Alps.
- The **Danube River**, one of Europe's major rivers, flows through the northern part of Austria.
- Austria has a **temperate continental climate**.
- Austria's mineral resources include **iron ore, limestone, tungsten, magnesite, salt, copper, gypsum** and **graphite**, contributing to various industrial sectors within the country.



POINTS TO PONDER

- Which institute signed an agreement with the Indian Register of Shipping to develop a ship trajectory prediction tool aimed at improving maritime safety? – **IIT Bombay**
- Recently, the National Commission for Protection of Child Rights (NCPCR) declared the mica mines of which state child-labor-free? – **Jharkhand**
- Recently, Masoud Pezeshkian has been elected as President of which country? – **Iran**
- Kaziranga National Park, recently seen in news, is located in which state? – **Assam**
- Krishna Raja Sagara (KRS) Dam, recently seen in the news, is located in which state? – **Karnataka**

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