

NEWS TODAY

2023 NOBEL PRIZE IN CHEMISTRY AWARDED FOR QUANTUM DOTS

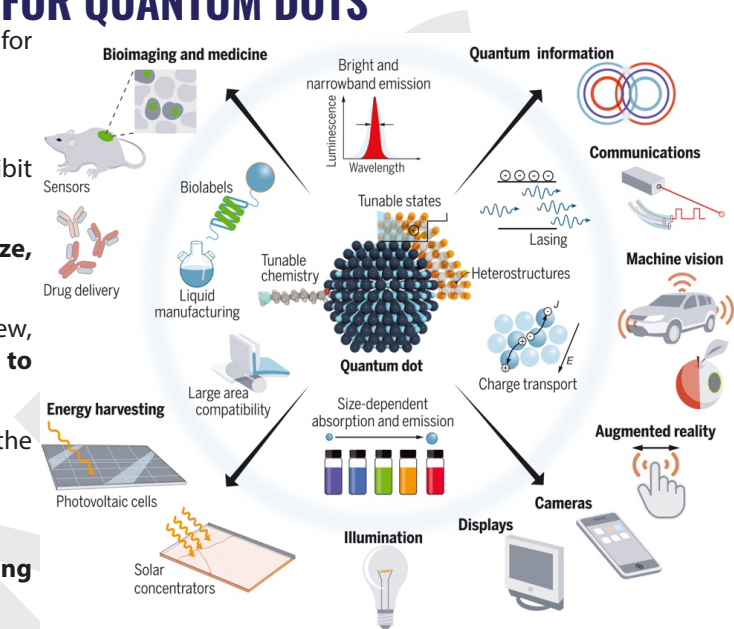
It was awarded to **Alexei Ekimov, Louis Brus and Moungi Bawendi** for discovery and synthesis of **quantum dots**.

About Quantum dots

- Quantum dots are **tiny particles (a few nanometres wide)** that exhibit **unique optical properties** due to their small physical size.
- Properties of quantum dots** can be changed by **changing their size**, for example they have different colours depending on their size.
- At the scale of nanometres**, materials and particles are capable of new, size-dependent properties because **quantum physical forces start to dominate**.
 - At the macroscopic scale**, like in our day to day lives, gravity and the rules of classical physics dominate.

About Nobel Winning Research

- In the early 1980s, **Alexei Ekimov** succeeded in **creating size-dependent quantum effects** in coloured glass.
 - He demonstrated that the **particle size affected the colour of the glass** via **quantum effects**.
- A few years later, **Louis Brus** was the first scientist in the world to **prove size-dependent quantum effects in particles floating freely** in a fluid.
- In 1993, **Moungi Bawendi** developed a technique to make the **quantum dots of well-defined sizes and with high optical quality**.



GLACIAL LAKE OUTBURST FLOOD (GLOF) IN SIKKIM

A GLOF occurred in the **South Lhonak Lake in Sikkim**, which caused the **rise of water levels in Teesta river**.

About GLOF

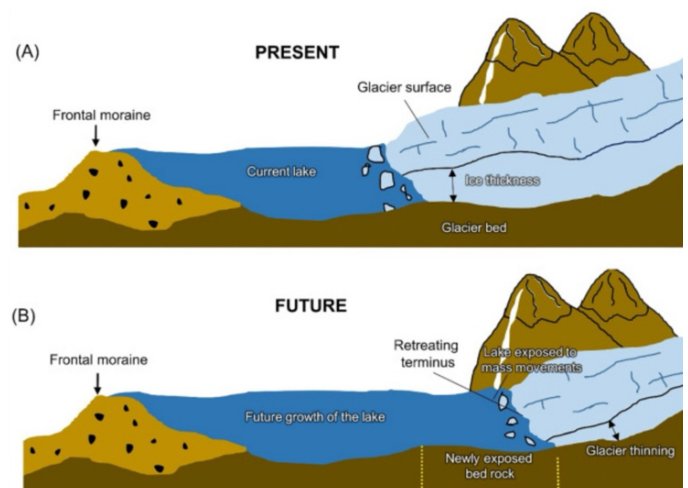
- A GLOF is a **type of flood occurring when water dammed by a glacier or a moraine** is released suddenly.
 - Moraine is a mass of **rocks and sediment carried down and deposited by a glacier, typically as ridges at its edges**.
- Unlike earthen dams, the **weak structure of the moraine dam leads to the abrupt failure of the moraine dam bounding the glacial lake**.

Trigger Points of GLOFs

- High/extreme surface runoff from the upstream catchment** resulting from heavy precipitation/cloud burst.
- Cascading flood from upstream lakes**.
- Landslide/Earthquake/Geological activity.
- Anthropogenic factors:** mass tourism; construction of roads and hydropower projects.

NDMA Guidelines to mitigate and respond to GLOF

- Hazard risk and Zonation Mapping**
- Hazard Reduction Options-** Artificial drainage system like Siphoning techniques, Control Blasting.
- Monitoring Glacial Lakes-** Utilize **Synthetic-Aperture Radar** imagery to detect changes in water bodies.
- Restricting constructions and development in GLOF prone areas**
- Establish a robust early warning system** in vulnerable zones.





THE FIFTH POSITIVE INDIGENISATION LIST (PIL) OF 98 ITEMS RELEASED BY THE MINISTRY OF DEFENCE

- PIL of 98 items, prepared by the Department of Military Affairs (DMA), will be procured by the three armed services from indigenous suppliers in a staggered manner as per specified timelines.
 - PIL is part of 'Aatmanirbhar Bharat Abhiyan' to boost self-reliance.
 - The DMA had earlier promulgated four Positive Indigenisation Lists comprising 411 military items.
- Fifth PIL Includes complex systems, sensors, weapons, and ammunition.
 - Some items on the list include a futuristic infantry combat vehicle, articulated all-terrain vehicles, several types of unmanned aerial vehicles, etc.
- Significance of Self-reliance on Defence
 - Reduce import dependency.
 - Intended to boost the Micro, Small and Medium Enterprises (MSMEs)
 - Enhance the design capabilities of the domestic defence industry.
 - To achieve a turnover of Rs 1.75 lakh crore in defence manufacturing by 2025 and a defence export target of Rs 35,000 crores.
- Other Initiatives to boost the defence industry
 - Launch of Innovations for Defence Excellence (iDEX) scheme to provide financial support to Start-ups, Micro, Small and Medium Enterprises (MSMEs) etc.
 - Liberalization of Foreign Direct Investment (FDI) in the defence sector allows 74% FDI under the automatic route and up to 100% through the Government route.

TRADE AND DEVELOPMENT REPORT 2023 RELEASED BY UNCTAD (UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT)

- Key Findings of the Report
 - The world economy growth is projected to be 2.4% in 2023.
 - The entire global economy, except East and Central Asia, has slowed since 2022.
 - Worrying trends are poorer nations' indebtedness, slower growth in major regions, and inadequate multilateral response.
 - India's economic growth is forecasted to be 6.6% (in 2023) and 6.2% (in 2024).
 - In India, the external sector alongside the private and government sectors has contributed to domestic growth.
 - Concerns highlighted for India are the unemployment rate of 8.5% in June 2023, and rising inequality.
- Key recommendations
 - Central banks must focus on long-term financial sustainability for the private and public sectors.
 - Increase real wages and commitments towards comprehensive social protection.
 - Investment in the energy transition process in developing countries.
 - Internationally, a systemic approach to regulating commodity and food trading needs to be developed.

GOVERNMENT OF INDIA NOTIFIES ESTABLISHMENT OF NATIONAL TURMERIC BOARD (NTB)

- NTB will focus on the development and growth of turmeric and turmeric products in the country.
 - Composition of the Board: A Chairperson (appointed by the Central Government) members from the Ministry of AYUSH, Departments of Pharmaceuticals, Agriculture & Farmers Welfare, Commerce & Industry, etc.
- Mandate:
 - Facilitate greater coordination with the Spices Board and other Government agencies.
 - Increase awareness and consumption, develop new markets internationally to increase exports.
 - Develop on traditional knowledge for value-added turmeric products.
- About Turmeric (Curcuma longa) as a crop:
 - Plant in the ginger family, is native to Southeast Asia.
 - Climatic and Soil:
 - Diverse tropical conditions,
 - 20-35 degree Celsius
 - Annual rainfall of 1500 mm or more.
 - Well-drained sandy or clay loam soils.
 - Turmeric is used in traditional Indian medical systems, cosmetic industries, Detoxify the liver, exhibit properties like antiviral, analgesic, antibacterial, anti-inflammatory etc.
- India is the largest producer, consumer and exporter of turmeric in the world. Over 75% of global turmeric production.
 - Largest producing states are Maharashtra, Telangana, Karnataka and Tamil Nadu.
 - Kandhamal Haldi, indigenous to Odisha, has a GI Tag.
 - The leading export markets: Bangladesh, UAE, USA and Malaysia.



United Nations Conference on Trade and Development (UNCTAD)



- **Genesis:** A permanent intergovernmental body established by the United Nations General Assembly in 1964.
- **Functions**
 - Helps developing countries participate more equitably in the global economy.
 - Supports developing countries efforts to use trade, investment, finance, and technology as vehicles for inclusive and sustainable development.
- **Members** -195 member states including India.
- **Reports**
 - Trade and Development Report
 - World Investment Report
 - The Least Developed Countries Report
 - Economic Development in Africa Report
 - Digital Economy Report
 - Technology and Innovation Report
 - Review of Maritime Transport



DHARA MUSTARD HYBRID (DMH-11) HAS FAILED TO MEET THE MINIMUM WEIGHT CRITERIA REQUIRED FOR THE COMMERCIAL RELEASE AS SEED

• As reported, DMH-11 has a weight of about **3.5 grams per 1,000 seeds**, which is **lower** than the norm of **4.5 grams** to be **eligible for notification as a seed variety**.

• About DMH-11

- DMH-11 has been developed by **Delhi University's Centre for Genetic Manipulation of Crop Plants (CGMCP)**.
- DMH-11 is a result of a cross between two varieties: **Varuna and Early Heera-2**.
- Such a cross wouldn't have happened naturally and **was done after introducing genes from two soil bacterium called barnase and barstar**.
 - Barnase in Varuna induces temporary sterility because of which it can't naturally self-pollinate.
 - Barstar in Heera blocks the effect of barnase allowing seeds to be produced.
- DMH-11 is a **transgenic crop because it uses foreign genes** from different species.
- **Status: The Genetic Engineering Appraisal Committee (GEAC)**, has approved the environmental release of **Dhara Mustard Hybrid-11 (DMH-11)** in **2022**.
 - **Bt cotton** is the only **genetically modified (GM) crop** that was approved for commercial cultivation in **2002** by the Government of India.

• Benefits of DMH-11

- Bring better yield and lower costs to farmers.
- Reduce **edible oil import dependency**.

ABOUT GENETIC ENGINEERING APPRAISAL COMMITTEE (GEAC)

- An **apex biotech regulatory body in India**.
- It is a **statutory body notified under Environment (Protection) Act, 1986**.
- Functions under the **Ministry of Environment, Forests & Climate Change**.
- Assesses **proposals regarding the release of genetically engineered products and organisms**.

ALSO IN NEWS



Enemy properties

- The first batch of 31 enemy properties spread across Uttar Pradesh were identified and listed for sale.
- Enemy property refers to **property or assets held or managed on behalf of an enemy subject or an enemy company**.
 - **To administer these properties, the Enemy Property Act was enacted in 1968.**
 - The law empowered the **Custodian of Enemy Properties in India (CEPI), Under Ministry of Home Affairs**, to manage and preserve the enemy properties.
- In 2017, The Enemy Property (Amendment and Validation) act was enacted which **allows transfer of enemy property from the enemy to other persons**.



PMSVANidhi Scheme

- Recently, PM SVANidhi achieved target of **covering 50 Lakh Street Vendors**.
- **About the scheme:**
 - It is **Central Sector Scheme** i.e. fully funded by **Ministry of Housing and Urban Affairs**.
 - **Objective:**
 - to facilitate working capital loan up to Rs 10,000;
 - to incentivize regular repayment;
 - to reward digital transactions.
- **Salient Features:**
 - **Loan tenure of 1 year** on working capital
 - **Interest Subsidy at 7% p.a.** on timely repayment, paid quarterly
 - **Monthly cash-back incentive** on digital transactions
 - **Higher loan eligibility on timely/early repayment** of the first loan
 - Covers **urban local bodies across the country**.



National Investment and Infrastructure Fund (NIIF)

- NIIF has entered into a collaboration with Japan Bank for International Cooperation (JBIC) to unveil a \$600 million India-Japan Fund.
 - The fund will have JBIC and Government of India as anchor investors.
- **About NIIF**
 - Anchored by the Government of India, it is a collaborative investment platform for international and Indian investors.
 - Three funds have been established by the Government under the NIIF platform: **Master Fund, Fund of Funds and Strategic Opportunities Fund**.
 - **The objective** of National Investment and Infrastructure Fund is to **invest largely in equity and equity-linked instruments**.

 <p>Cape Town Convention (CTC)</p>	<ul style="list-style-type: none">● Ministry of Corporate Affairs has notified that some provisions of the Insolvency and Bankruptcy Code (IBC) would not apply to aircraft, their engines, airframes, and helicopters.<ul style="list-style-type: none">➤ It will make easier to recover assets especially aircraft and engines even when an airline goes through insolvency.● With recent notification, the Indian government has officially adopted the Cape Town Protocol & Convention.<ul style="list-style-type: none">➤ This Convention aims to achieve efficient financing of high value mobile equipment, like airframes, helicopters and engines.➤ India became party to the convention in 2008.
 <p>State of the World's Amphibians: The Second Global Amphibian Assessment Report</p>	<ul style="list-style-type: none">● The report is an analysis of the second Global Amphibian Assessment conducted by the IUCN SSC Amphibian Specialist Group's Red List Authority.● Key Findings<ul style="list-style-type: none">➤ 41% of amphibians are threatened with extinction.➤ The heaviest concentrations of threatened amphibians were found to be in the Caribbean islands, Mexico and Central America, the tropical Andes region, India, Sri Lanka, etc.➤ Habitat loss remains the most common threat.➤ From 2006 to 2022, the number of amphibian species in India nearly doubled.● Amphibians are small vertebrates that need water, or a moist environment, to survive.
 <p>NanoPtA (Nano-sized enzyme mimetics or nanozymes)</p>	<ul style="list-style-type: none">● Scientists at the Indian Institute of Science have developed a new type of enzyme mimetic called NanoPtA that can effectively degrade toxic chemicals in industrial wastewater in the presence of sunlight.<ul style="list-style-type: none">➤ The team tested the nanozyme's effect on common effluents that pollute water, like phenols and dyes.➤ They found that it could degrade even small (micromolar) quantities of phenols and dyes within ten minutes when placed under sunlight.● These nanozymes mimic the function of natural enzymes but overcome limitations such as sensitivity to denaturation and high production costs.
 <p>Mewari miniature style painting</p>	<ul style="list-style-type: none">● Allah Baksh, Maharana Jai Singh's court painter, had illustrated the Mahabharata with 4,000 Mewari miniature paintings.● About Mewari miniature painting (17th-18th centuries)<ul style="list-style-type: none">➤ It is a school in the Rājasthanī style developed in Mewār (Rājasthān).➤ It is characterized by simple bright colour and direct emotional appeal.➤ One of the outstanding painters of the early phase was the artist Sāhibdīn (drew Raagmala).● Miniature painting is a small, finely wrought portrait executed on vellum, prepared card, copper, or ivory.<ul style="list-style-type: none">➤ The name is derived from the minium, or red lead, used by the medieval illuminators
 <p>Personality in News</p>	<p>Shyamji Krishna Varma (1857- 1930)</p> <ul style="list-style-type: none">● Born in Gujarat, he completed his education in India and taught Sanskrit at the Oxford University.● In 1905 he founded 'The India House' and 'The Indian Sociologist' which acted as a meeting point for radical nationalists among Indian students in Britain.● He moved to Paris in 1907 avoiding prosecution.● Through the Indian Home Rule Society, he criticised British rule in India.● He became the first President of Bombay Arya Samaj.● He inspired Veer Savarkar who was a member of India House in London.