

Regent Education and Research Foundation Group of Institutions
Daily Current Affairs Synopsis

Date: 23rd, 24th & 25th JAN 2024

(Useful for UPSC/WBPSC/SSC Exams.)

► **As per IEA report,**

Biofuel demand is set to **expand 38 billion litres over 2023-2028**, a near **30% increase** from last five-year period. This surge is predominantly driven by **emerging economies like Brazil, Indonesia, and India**.

► Biofuels are **renewable energy fuels derived from biomass** like crop stubble, plant waste and municipal solid waste.

Biofuels are **used in place of or in blend with, diesel, petrol** for applications like transportation etc. This includes **Ethanol, Compressed Bio Gas (CBG)** etc.

► **Significance of Biofuels**

Decarbonising transport by providing low-carbon solution for sectors like trucking, shipping and aviation. Biofuels will help achieve **Panchamrit's Net zero target** by 2070.

Reduce dependence on import of crude oil.

► **Challenges in Biofuel adoption**

High production cost compared to other conventional fuels.

Use of major crops (Corn, Rice, Maize, Sugar etc.) to produce more biofuels will **negatively impact India's food security**.

Impact water quality. For example, Converting pastures into maize fields may increase runoff of excess nitrogen and phosphorous into surface and groundwater.

Face direct competition from other greenhouse gas emissions reduction technologies like electric vehicles and biogas, which are more cost-effective.

Initiatives taken for Biofuels

India

National Policy of Biofuels.

Galvanizing Organic Bio-Agro Resources (GOBAR) Dhan to set up 500 new CBG plants.

SAMARTH (Sustainable Agrarian Mission on use of Agro-residue in Thermal Power Plants) scheme.

Sustainable Alternative Towards Affordable Transportation (SATAT) initiative to set up 5000 Bio-CNG plants by 2023-24.

Global

Global Biofuel Alliance. India is its member.

World Biofuel Day (10th August every year).

► As the **world's third-largest** car market with **one of the lowest per capita vehicle penetration**, India presents an opportunity for growth of autonomous driving vehicles.

► **Autonomous driving or self-driving vehicles** are vehicles that **do not require human operation to navigate** to a destination.

These combine **sensors** to create and maintain an internal map of their surroundings.

Software uses sensors data to send instructions to vehicle's actuators, which control acceleration, braking, and steering. **Hard-coded rules, obstacle avoidance algorithms, predictive modeling, and smart object discrimination** help software to navigate obstacles.

► There are **six levels in evolution of autonomous driving**, describing extent to which car takes over responsibilities from driver (refer infographic).

► **Challenges for autonomous vehicles in India:**

Highest road accidents; **Infrastructure challenge** with concerns regarding quality of roads; **Haphazard traffic patterns** and traffic violations; **Loss of employment** as drivers etc.

► **Moral Dilemmas of autonomous vehicles**

⊕ **Predetermined Decisions over Random Decisions** in all cases including accidents.

⊕ **Liabilities or responsibility for accidents** where control was transferred to driver at last moment.

⊕ **Hacking dilemma** where cybercriminal takes control of vehicle.

⊕ **Who gets to decide ethics of self-driving vehicles** - driver, engineers or government?

India overtakes Hong Kong to become fourth-largest stock market

- According to **data compiled by Bloomberg**, combined value of shares listed on Indian exchanges reached USD 4.33 trillion, versus USD 4.29 trillion for Hong Kong, on Jan 22, 2024.
 - ⊖ Top three stock markets are the US, China, and Japan.
- **Stock market** is where investors, both individual and institutional, trade a wide range of securities such as stocks, bonds, Exchange Traded Funds (ETFs), derivatives, etc.
 - ⊖ **Two types of stock market:**
 - ◆ **Primary Market:** New shares, bonds, etc., are offered for the first time.
 - ◆ **Secondary Market:** Existing securities (equities, bonds, etc.) are traded. e.g., Stock exchanges like Bombay Stock Exchange.
- **Significance of stock market**
 - ⊖ **For Businesses:** Access to capital, risk diversification, business expansion, etc.
 - ⊖ **For Investors:** Better returns compared to traditional savings instruments, tax benefits, capital growth, etc.
 - ⊖ **For Society:** Social Impact bonds, Sustainable investment through Green bonds, etc.
 - ⊖ **For Economy:** Mobilization of idle savings, boost to entrepreneurship through venture capital funds, etc.
- **Issues with Indian Stock markets:** High volatility, limited issuer and investor base adversely affects liquidity, sub-optimal corporate debt market due to dominance of government bonds, etc.

Regulation of Stock Markets in India

- **Securities and Exchange Board of India (SEBI):** Regulates different market intermediaries like stock brokers, stock exchanges, etc.
 - ⊖ SEBI is a statutory body under SEBI Act, 1992.
- **Reserve Bank of India (RBI):** Regulates Government Securities market, etc.

Prime Minister held high-level review meeting after Vijay Raghavan committee submitted its report to revamp DRDO

- A committee headed by **Prof. K. Vijay Raghavan** was constituted by Ministry of Defence.
 - ⊖ Its purpose was to **review the functioning of Defence Research and Development Organization (DRDO)** and restructure Defence Research and Development (R&D) ecosystem of country.
 - ⊖ **DRDO (HQ: Delhi)** is R&D wing of **Ministry of Defence** to empower India with cutting-edge defence technologies. It was established in 1958.
- **Key recommendations made by Vijay Raghavan committee for DRDO**

Structural	<ul style="list-style-type: none"> ⊖ Creation of Defence Technology Council (DTC) headed by Prime Minister with Defense Minister and National Security Advisor (NSA) as its Vice Presidents. <ul style="list-style-type: none"> ➤ DTC should determine country's defense technology roadmap and decide on major projects and their execution. ➤ DTC is proposed to have an executive committee chaired by Chief of Defence Staff. Principal Scientific Advisor will be its member. ⊖ Creation of a separate department under Defence Ministry i.e. Department of Defence Science, Technology, and Innovation (DDSTI) to promote defence R&D in academic and start-up ecosystem. <ul style="list-style-type: none"> ➤ It will serve as secretariat for DTC.
Research	<ul style="list-style-type: none"> ➤ Focus on Intelligence, Surveillance, and Reconnaissance technologies. ⊖ Focus on areas in life sciences.
Human Resources	<ul style="list-style-type: none"> ⊖ Hiring 100 graduates from campus on contract every year. ⊖ Energising DRDO's lateral entry programme. ⊖ Reducing median age of DRDO to 35.
Laboratories	<ul style="list-style-type: none"> ⊖ Restructuring 41 DRDO labs into 10 national labs - in Delhi, Bengaluru (2), Hyderabad (2), Pune, Dehradun, Chennai, Visakhapatnam and Chandigarh.

Centre seeks data from States to assess the functioning of Surrogacy Act, 2021

- ▶ **Union Ministry for Health and Family Welfare** sought category-wise data on the **total number of couples and single and unmarried women** who have opted for surrogacy.
- ⊕ Ministry also sought category-wise data on women who have opted for **Assisted Reproductive Technology (ART)**, since enactment of **ART (Regulation) Act, 2021**.
- ▶ Surrogacy is a practice whereby one woman bears and gives birth to a child for an intending couple.

Two types of Surrogacy: Altruistic and Commercial.

▶ Surrogacy (Regulation) Act, 2021

Only altruistic surrogacy is allowed and prohibits commercial surrogacy.

A woman can act as a surrogate **only once in her lifetime**.

Eligibility for Surrogate mother

- ◆ a **married woman** having a child of her own, and 25 to 35 years old;
- ◆ possess a **certificate of medical and psychological fitness** for surrogacy.

Eligibility criteria for couples

- ◆ **married for five years**, wife (25-50 years) and husband (26-55 years);
- ◆ Couple **must not have any living child** (biological, adopted or surrogate);
- ◆ Should have **'essential' certificate of proven infertility** of either partner certified by a District Medical Board.

Supreme Court in **Arun Muthuvel vs. Union of India case (2023)** allowed the use of **donor gametes** (eggs and sperms) in surrogacy.

Previously, **Rule 7 of the Surrogacy (Regulation) Rules, 2022**, amended through **Surrogacy (Regulation) Amendment Rules, 2023**, banned the use of donor gametes.

Standards Machine Applicable Readable and Transferable (SMART)

- ▶ **Bureau of Indian Standards (BIS)** in association with **IEC** and **ISO** conducted workshop to clarify **SMART standards**.
- ▶ **SMART** are **digitally enabled standards** that are **machine-applicable, readable, and transferable**.
SMART is joint programme of **International Organization for Standardization (ISO)** and **International Electro-technical Commission (IEC)** to drive **digital evolution of international standards**.
- ⊕ **Benefits:** Enhanced industry efficiency; Facilitating automation and innovation, User-centric simplicity, etc.
- ▶ **ISO** is a **non-governmental international standard-development organization with membership of 170 national standards bodies** including BIS (India).
- ▶ **IEC** is international standards organization, **publishes international standards for electrotechnology**.

Ministry of Mines notified four rules to implement the Exploration License (EL) regime

- ▶ Notified under the **Mines and Minerals (Development and Regulation) (MMDR) Act, 1957**, these rules include: Mineral
⊕ (Auction) Amendment Rules, 2024
⊕ Mineral Conservation and Development (Amendment) Rules, 2024
Minerals (Evidence of Mineral Contents) Amendment Rules, 2024
Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Amendment Rules, 2024

Exploration License (EL)

EL means a licence granted for undertaking **reconnaissance operations or prospecting operations** or both.

- ◆ It was introduced through **MMDR Amendment Act, 2023**.
- ◆ Issued in respect of **29 minerals specified in Seventh Schedule** of MMRD Act including Cobalt, Lithium, Nickel, Gold, etc.

Granted by: State governments through competitive bidding.

Tenure: 5 years from date of execution of EL.

Central government through rules can prescribe the details such as manner of auction, bidding parameters, etc.

MMDR Act 1957 is the **principal legislation regulating mines and mineral sector** in India.

It classifies mining related activities into-

- ◆ **Reconnaissance** (preliminary survey to determine mineral resources),
- ◆ **Prospecting** (exploring, locating, or proving mineral deposits), and
- ◆ **Mining** (commercial extraction).

Coalition for Epidemic Preparedness Innovations (CEPI)

Serum Institute of India joins **CEPI global network** to boost production of vaccines.

About CEPI (HQ: Oslo, Norway)

An **innovative global partnership** between public, private, philanthropic, and civil society organisations.

- ⊕ **Founded in Davos, Switzerland** in 2017 by **Governments of Norway and India**, Bill & Melinda Gates Foundation, Wellcome Trust, and World Economic Forum.
- ⊕ Provide funds to **accelerate development of vaccines and other biologic countermeasures against epidemic and pandemic threats** so they can be accessible to all people in need.
- ⊕ Examples of **CEPI-funded vaccines:** Nipah Virus, Lassa fever Vaccine etc.



Dynamic Wireless Charging (Inductive charging)

- Government is planning to build **electric vehicle (EV)-ready highways** on **Golden Quadrilateral** in which dynamic wireless charging can play a key role.
- **Dynamic wireless charging technology** enables power exchange between vehicle and grid while the vehicle is moving ubiquitously.
 - ⊕ Energy exchange is facilitated by **inductive power transfer (IPT)** between vehicles.
 - ◆ **Moving Buses/trucks can act as energy sources** to EVs that need charging.

It can also be done by **embedding charging infrastructure under the surface of road.**
- **Significance:** Reduced battery size, decarbonization of transport, etc.

Zombie viruses (Methuselah viruses)

- Scientists warn that melting Arctic permafrost could unleash 'zombie viruses' and trigger a global medical emergency.
- **About Zombie Viruses**

Refers to ancient viruses frozen in permafrost for thousands of years.

 - ◆ Permafrost is any ground that remains **completely frozen** -32°F (0°C) or colder—for **at least 2 years straight.**

Melting of permafrost has revived these pathogen viruses. They may have potential of triggering new and unknown **infectious diseases.**

VAIshwik BHArtiya Vaigyanik (VAIBHAV) Fellowship

- Ministry of Science and Technology has launched the **first batch of VAIBHAV Fellowships.**
- VAIBHAV Fellowship envisages collaboration **between scientists of Indian Diaspora with Indian Higher Educational Institutions (HEIs), Universities and/ or public funded Scientific Institutions.**
 - Fellowship would be awarded to **outstanding scientists/ technologists of Indian origin (NRIs/OCIs/PIOs).**
 - Fellowship is for **1-2 months each year for a period of 3 years.** 75 selected fellows would be invited to work in **18 identified knowledge verticals**, including quantum technology, health, pharma, etc.

Switzerland (Capital: Bern)

- Switzerland and India have reached consensus on Free-Trade Agreement after 16 years of negotiation.
- **Political features**

Landlocked country of central Europe.
Bordered to **France** (west), **Germany** (north), **Austria** and **Liechtenstein** (east), and **Italy** (south).
- **Geographical features**
 - ⊕ **Major Rivers:** River Rhine, Rhone
 - ⊕ **Highest Point:** Dufourspitze.
 - ⊕ **Major mountain ranges:** Alps, Jura.



Mpemba effect

- Researchers contend that **hot water freezes faster than its colder counterpart**, a phenomenon known as **Mpemba Effect.**
 - ⊕ According to it, hot water **evaporates more rapidly**, reducing its mass and inducing a cooling effect.
 - ⊕ When heated, **Hydrogen bonds in water break**, causing water molecules to move apart and **facilitating quicker freezing due to energy loss.**
 - ⊕ In contrast, cold water's freezing process is **impeded by presence of gases and impurities.**

Subhash Chandra Bose Aapda Prabandhan Puraskar (SCBAPP) -2024

60 Parachute Field Hospital in Uttar Pradesh has been selected for SCBAPP - 2024.

About Award:

- Announced every year on 23rd January (Parakram Diwas) - birth anniversary of **Netaji Subhash Chandra Bose.**
- Recognises and honors invaluable contributions and selfless services rendered by **individuals and organizations in Disaster Management.**

Only Indian nationals and Indian institutions are eligible to apply for the award.

Any individual/institution can nominate an individual or institution for the award.

Bharat Ratna Award

Government has decided to confer **Bharat Ratna** to former Bihar CM **Karpoori Thakur**, posthumously.

About Bharat Ratna

- **India's highest civilian award**, instituted in **1954.**

Awarded in recognition of **exceptional service/performance** of highest order in any field of human endeavour. **Recommended by Prime Minister to President of India.** Restricted to **Maximum of three in a particular year.**

- Recipient receives a **Sanad (certificate)** signed by President and a **medallion.**

Does not carry any monetary grant

It is not a title under Article 18.