

My Notes....

NATIONAL

WEAPONS OF MASS DESTRUCTION BILL PASSED

Parliament on 1 August 2022 passed **The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Amendment Bill, 2022** which seeks to **ban funding of weapons of mass destruction** and also **empowers the Centre to freeze, seize or attach financial assets** and economic resources of people engaged in such activities.

What

1. The **Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act**, passed in 2005, **only banned manufacture of weapons** of mass destruction.
2. The amendment bill seeks to **insert a new Section 12A** in the existing law which states that "no person shall finance any activity which is prohibited under this Act, or under the **United Nations (Security Council) Act, 1947** or any other relevant Act for the time being in force, or by an order issued under any such Act, in relation to weapons of mass destruction and their delivery systems."
3. While there is **no single, authoritative definition of a WMD in international law**, the expression is usually understood to cover **nuclear, biological, and chemical (NBC)** weapons.
4. According to the **United States Department of Homeland Security**, "A weapon of mass destruction is a **nuclear, radiological, chemical, biological, or other device** that is intended to harm a large number of people."

India's 2005 WMD Act defines:

1. "**Biological weapons**" as "**microbial or other biological agents, or toxins...**of types and in quantities that have no justification for **prophylactic, protective** or other peaceful purposes; and weapons, equipment or delivery systems specially designed to use such agents or toxins for hostile purposes or in armed conflict"; and
2. "**Chemical weapons**" as "**toxic chemicals and their precursors**" except where used for peaceful, protective, and certain specified military and law enforcement purposes; "**munitions and devices specifically designed to cause death or other harm through the toxic properties of those toxic chemicals**"; and any equipment specifically designed for use in connection with the employment of these munitions and devices.

NEW CRIMINAL PROCEDURE (IDENTIFICATION) ACT

The **Criminal Procedure (Identification) Act, 2022**, which was passed by Parliament in April this year, has come into force from 4 August 2022. The new law, which replaces a similar colonial era law, **authorises police officers** to take measurements of people convicted, arrested or facing trial in criminal cases, including **their iris and retina scans** and **even biological samples** with exceptions, and store these **for up to 75 years**.

What is the Criminal Procedure (Identification) Act, 2022?

1. The **new law** provides **legal sanction to the police** to take **physical and biological samples** of convicts as well as those accused of crimes.
2. Basically, it will allow the police to collect "**finger-impressions, palm-print impressions, footprint impressions, photographs, iris and retina scan**, physical, biological samples and their analysis, **behavioural attributes** including **signatures**, handwriting or any other examination" referred to in **section 53 or section 53A** of the **Code of Criminal Procedure, 1973**.

3. As per the provisions of the law, any person **convicted, arrested** or detained under **any preventive detention law** will be required to provide "**measurements**" to a police officer or a prison official.
4. It also authorises the **National Crime Records Bureau (NCRB)** to store, preserve, share with any law enforcement agency and destroy the record of measurements at national level. The records can be **stored up to a period of 75 years**.
5. The law's objective is to **ensure the unique identification** of those involved with crime and to help investigating agencies solve cases.

How different is it from the colonial-era law

1. The new law will replace colonial-era legislation, called **The Identification of Prisoners Act** which dates back to 1920.
2. The new law is described as a **modern**, broader but an **"intrusive" version** of its predecessor.
3. While the old law allowed authorities to take **only fingerprint and footprint impressions** of a limited category of convicted persons, the new law allows police to collect a **range of biological and identity samples** not only from convicts but also those arrested or even detained under any preventive detention law.
4. By design, **the old law was limited to serious offenders only** but its new counterpart will include **all categories of criminals and accused**

A BILL TO MANDATE USE OF CLEAN ENERGY PASSED

Lok Sabha on 8 August 2022 passed the **amendments to the Energy Conservation Act** aimed at putting in place provisions to make the **use of clean energy mandatory** and paves way for **setting of carbon markets** in the country. **The Energy Conservation (Amendment) Bill, 2022**, seeks to mandate use of **non-fossil sources**, including **biomass** and **ethanol** for energy and feedstock along with the use of **green hydrogen** and **green ammonia**.

More about the bill

1. It also proposes to **enhance the scope of Energy Conservation Building Code** and bring large residential buildings within the ambit of energy conservation regime.
2. The **Energy Conservation Act, 2001** was last amended in the year 2010 to address various new factors which emerged with the development of the energy market over a period of time and to provide for **more efficient and effective use of energy** and its conservation.
3. The **context of energy transition** with special focus on promotion of new and renewable energy and **National Green Hydrogen Mission**, a need has arisen to further amend the said Act to facilitate climate targets committed at

What are carbon markets?

1. The **creation of a domestic carbon market** is one of the most significant provisions of the proposed amendment Bill. **Carbon markets** allow the **trade of carbon credits** with the overall objective of bringing down emissions.
2. **Under the Kyoto Protocol**, the **predecessor to the Paris Agreement**, carbon markets have worked at the international level as well. The **Kyoto Protocol** had prescribed emission reduction targets for a group of developed countries.
3. Globally, **68 carbon pricing instruments (CPIs)**, covering 23% of the GHG emission, are operational.
4. The roll-out in India is expected to happen in **three phases**, leveraging the existing infrastructure and building on the learning from the **Perform Achieve and Trade (PAT)** scheme and the global experience in this sphere.

COP26 summit, promote renewable energy and **development of domestic carbon market** to battle climate change.

4. It mandates **use of non-fossil sources** to ensure **faster decarbonization** of Indian economy and help in **achieving sustainable development goals** in line with the **Paris Agreement**.
5. The bill would also **empower state governments** to make rules regarding fees to be levied for the services rendered by the designated agency for promoting **efficient use of energy** and its conservation along with the preparation of the budget of the designated agency.

75 RAMSAR SITES IN 75TH YEAR OF INDEPENDENCE

India adds 11 more wetlands to the list of **Ramsar sites** to make total **75 Ramsar sites** covering an area of **13, 26,677 ha in the country** in the 75th year of Independence. Tamil Nadu has maximum no. of Ramsar sites (14 nos), followed by UP which has 10 nos. of Ramsar sites.

What

1. The **11 new sites** include: **Four (4) sites in Tamil Nadu, Three (3) in Odisha**, Two (2) in Jammu & Kashmir and One (1) each in Madhya Pradesh and Maharashtra.
2. **Maharashtra's Thane Creek** was on 13 August 2022 **designated** as a **Ramsar site**, a **wetland of international significance**.
3. This is the **first time a wetland in India** located **within an urban metropolis** has received such a designation.
4. **India** is one of the **Contracting Parties to Ramsar Convention**, signed in **Ramsar, Iran**, in 1971.
5. **India signed it on 1st Feb 1982**. During **1982 to 2013**, a **total of 26 sites** were added to the **list of Ramsar sites**, however, during 2014 to 2022, the country has added **49 new wetlands** to the list of Ramsar sites.
6. During this year itself (2022) a total of **28 sites have been declared as Ramsar sites**.
7. Based on the date of designation mentioned on **Ramsar Certificate**, the number is 19 for this year (2022) and 14 for previous year (2021).

A BILL TO CREATE GATI SHAKTI VISHWAVIDYALAYA

Parliament 8 August 2022 passed a bill to **convert** the **National Rail and Transportation University**, a deemed-to-be university, into **Gati Shakti Vishwavidyalaya**, an autonomous central institution. The bill was passed by the Rajya Sabha by a voice vote. It was cleared by the Lok Sabha last week, also by a voice vote.

More about the bill

1. The Bill seeks to expand the scope of the **deemed university** from beyond the railways to **cover the entire transport sector** to support the ambitious growth and modernisation in the field as announced in the Union Budget this year.
2. The **Gati Shakti Vishwavidyalaya** would be a multi-disciplinary and multi-dimensional institute and the **first Central University** after the rollout of the **National Education Policy**.
3. The plan is to unify different departments to create a **new infrastructure** where various transport sector elements — **railways, road, waterways**, aviation and port along with information and technology — will coordinate with each other on the platform of **Gati Shakti Mission**.
4. The establishment of the **Gati Shakti Vishwavidyalaya** would address the need of talent in the strategically important and expanding transportation sector and meet the demand for trained talent to fuel the growth and expansion of the sector.
5. The focus of the institute would be on **five major aspects** — transport-focused courses, skill development, applied research, technology development and transport economics and infrastructure financing.

6. It seeks to incorporate infrastructure schemes of various Ministries and State governments such as **Bharatmala, Sagarmala, inland waterways**, dry and land ports.

PMAY-URBAN EXTENDED TILL DEC 2024

The Union Cabinet on 10 August 2022 approved continuation of **Pradhan Mantri Awas Yojana (Urban)** till December, 2024. **Launched in June, 2015**, the original deadline for the scheme - **'Housing for All' Mission** - aimed at providing pucca houses to all eligible urban beneficiaries was **March 2022**.

What

1. **PMAY-U: Housing for All** is one of the major flagship programmes being implemented by Government of India to provide **all weather pucca houses** to all eligible beneficiaries in the **urban areas** of the country through **States/UTs/Central Nodal Agencies**.
2. The scheme covers the **entire urban area of the country**, i.e., all statutory towns as per Census 2011 and towns notified subsequently, including Notified Planning/ Development Areas.
3. The scheme is being implemented through **four verticals: Beneficiary Led Construction/Enhancement (BLC), Affordable Housing in Partnership (AHP), In-situ Slum Redevelopment (ISSR)** and **Credit Linked Subsidy Scheme (CLSS)**.
4. The continuation of the scheme up to December 31, 2024 will help in completion of already sanctioned houses under **BLC, AHP and ISSR verticals**.

INTERNATIONAL

INDIA KEEN TO JOIN A GLOBAL ALLIANCE MSP

As part of a global **'China-plus-one'** strategy adopted post the **Covid-19 pandemic** that caused massive **supply-chain disruptions**, a group of western nations are cooperating to develop alternatives to China **to ensure key industrial supplies**. A new **US-led partnership initiative of 11 nations** aims to bolster critical mineral supply chains. **India is not part of this arrangement** — called the **Minerals Security Partnership (MSP)** — but New Delhi is working through diplomatic channels to fetch an entry.

What is the Minerals Security Partnership (MSP)?

1. The **US and 10 partners** — Australia, Canada, Finland, France, Germany, Japan, the Republic of Korea (South Korea), Sweden, the United Kingdom, and the European Commission — have come together **to form the MSP**.
2. The new grouping is aimed at **catalysing investment** from governments and the private sector to develop **strategic opportunities**.
3. The MSP will help **catalyse investment** from governments and the private sector for **strategic opportunities**

What are rare earth elements?

1. The **17 rare earth elements (REE)** include the **15 Lanthanides** (atomic numbers 57 — which is Lanthanum — to **71 in the periodic table**) plus **Scandium** (atomic number 21) and **Yttrium (39)**. REEs are classified as **light RE elements (LREE)** and **heavy RE elements (HREE)**.
2. **Some REEs are available in India** — such as **Lanthanum, Cerium, Neodymium, Praseodymium and Samarium**, etc.
3. Others such as **Dysprosium, Terbium, and Europium**, which are **classified as HREEs**, are not available in Indian deposits in extractable quantities.
4. Hence, **there is a dependence on countries such as China** for HREEs, which is one of the leading producers of REEs, with an estimated 70 per cent share of the global production.

— across the full value chain — that adhere to the **highest environmental, social, and governance standards**.

4. The new grouping could **focus on the supply chains of minerals** such as **Cobalt, Nickel, Lithium**, and also the **17 'rare earth' minerals**.
5. The alliance is seen as primarily focused on evolving **an alternative to China**, which has created processing infrastructure in **rare earth minerals** and has acquired mines in Africa for elements such as Cobalt.

GREATER MALE CONNECTIVITY PROJECTS LAUNCHED

Indian Prime Minister and **Maldivian President** launched the "**Greater Male connectivity projects in the Maldives**" and also entered pacts in areas like **cyber security, disaster management, and police infrastructure development**.

What

1. The **Male connectivity projects** will be built under India's \$100 million grant and \$400 million line of Credit. India also **extended a \$100 million line of credit** for development projects in the Maldives.
2. Both countries **exchanged six documents** on areas like **cyber security, disaster management, and police infrastructure development**.
3. **Maldives is India's key neighbour in the Indian Ocean Region** and occupies a special place in **India's Neighbourhood First Policy**. In recent years, the partnership has witnessed rapid growth in all areas of cooperation.
4. **For India**, the Maldives has always been a close and **important maritime neighbour**. Multifaceted ties between the two countries have strengthened despite the pandemic-related disruptions.
5. India's "**Neighborhood First**" **policy** and Maldives's "**India First**" policy work in tandem to tackle shared concerns and advance mutual interests.

Flashback

1. It will consist of a **6.74 km-long bridge and causeway** link between Male and nearby islands of **Villingli, Gulhifalhu and Thilafushi**. It will use **renewable energy**.
2. It is **not only the biggest project India** is doing in the Maldives but also the **biggest infrastructure project** in the Maldives overall.

INDIA'S TALKS WITH NATO

New Delhi held its **first political dialogue** with the **North Atlantic Treaty Organisation (NATO)** in Brussels on 12 December 2019. The idea was to ensure the dialogue was **primarily political in character**, and to avoid making any commitment on military or other bilateral cooperation.

What is the significance of India's talks with NATO?

1. India's talks with NATO hold significance given that the **North Atlantic alliance** has been engaging both **China and Pakistan in bilateral dialogue**.
2. There was a view here that given the **role of Beijing and Islamabad** in New Delhi's strategic imperatives, reaching out to **NATO would add a key dimension to India's growing engagement** with US and Europe.
3. Until December 2019, NATO had held **nine rounds of talks with Beijing**, and the Chinese Ambassador in **Brussels** and NATO's Deputy Secretary General engaged with each other every quarter.
4. NATO had also been in **political dialogue and military cooperation with Pakistan**; it opened selective training for Pakistani officers and its military delegation visited Pakistan in November 2019 for military staff talks.

What is NATO?

1. The **North Atlantic Treaty Organisation**, or NATO, is a **political and military alliance** of 28 European countries and **two countries in North America** (United States and Canada).
2. It was **set up in 1949** by the US, Canada, and several western European nations to ensure **their collective security** against the **Soviet Union**. It was the **US's first peacetime military alliance** outside the western hemisphere.
3. **Thirty countries** are **currently members of NATO**, which is headquartered in **Brussels, Belgium**. The headquarters of the Allied Command Operations is near Mons, also in **Belgium**.

ECONOMY

INDIA IN ANNUAL RENEWABLE ENERGY INVESTMENT

According to a **United Nations (UN) report**, **eighty-four per cent** of nearly \$1 trillion of global investment in **energy transition technologies in 2021** was deployed in **China, India, Japan, the US and Europe**. The findings were presented in the **third brief** of the **Global Crisis Response Group (GCRG)** on Food, Energy and Finance, which was released by **UN Secretary-General António Guterres** and **UNCTAD Secretary-General Rebeca Grynspan** on 3 August 2022.

More about the report

1. The report mentions that **\$4 trillion-\$6 trillion in annual investments** will be required until 2030 **to ensure equitable renewable energy transition**.
2. However, **since 2017**, annual **global energy-related investments** have been **\$2 trillion-\$2.5 trillion**. Moreover, these investments are concentrated in **China, India, Japan, the US and Europe**.
3. Findings reveal that the **Covid-19 pandemic further widened this gap** as advanced economies deployed recovery packages with renewable energy targets.
4. In other countries, such as the **Democratic Republic of the Congo, Niger, Nigeria and Pakistan**, the number of people without access to energy increased.
5. The report also mentions that the **twin blows dealt by the pandemic and the war in Ukraine** have also gripped the world in a **major energy crisis**.
6. This has impacted **hard-won gains** in providing access to energy and **reducing energy poverty**, thus leading to a "**scramble for [fossil] fuel**".
7. This makes meeting the targets under the **Paris Agreement** of not exceeding a **global rise of 1.5 degrees Celsius** above pre-industrial temperatures difficult.
8. The report stresses the **need to double down on renewable energy sources** to achieve the **net-zero goal, tackle energy poverty** and boost and diversify the global energy mix.
9. According to an **International Renewable Energy Agency report in 2021**, over two-thirds of newly installed **renewable energy power** was cheaper than the cheapest fossil fuel alternative in member countries of the Group of 20.

SCIENCE AND TECHNOLOGY

ISRO FACES SETBACK AS MAIDEN SSLV MISSION

Indian Space Research Organisation's tryst with history **suffered a setback** on 7 August 2022, as the **maiden Small Satellite Launch Vehicle (SSLV)** suffered "**data loss**" at the terminal stage, although three stages "**performed and separated**" as planned and the scientists were "**currently analysing**" the data to ascertain the cause behind it.

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What

1. The two satellites -- **Earth Observation Satellite** and the **AzaadiSAT** -- got separated as planned.
2. The **Earth Observation Satellite EOS-02** and the co-passenger student satellites **AzaadiSAT** are the major payloads for the **SSLV**.
3. The **EOS-02** is an experimental **optical remote sensing satellite** with a high spatial resolution.
4. The **AzaadiSAT** is a **8U CubeSat** weighing around **8 kilograms**. It carries **75 different payloads** each weighing around 50 grams. **Girl students from rural regions** across the country were provided guidance to build these payloads.
5. The payloads are integrated by the student team of '**Space Kidz India**'. The ground system developed by '**Space Kidz India**' will be utilised for receiving the data from this satellite.
6. **SSLV-D1** placed the satellites into **356 km x 76 km elliptical orbit** instead of **356 km circular orbit**.
7. **Satellites are no longer usable**. Issue is reasonably identified. Failure of a logic to identify a **sensor failure** and go for a salvage action caused the deviation.

About SSLV

1. With the new variant, ISRO now has **three rockets — Polar Satellite Launch Vehicle (PSLV) and its variants** (costing ₹200 crore); **Geosynchronous Satellite Launch Vehicle (GSLV-Mk II and Mk III)** and its variants (Mk II costing ₹275 crore and Mk III around ₹435 crore) and **SSLV** (development cost of around ₹55 crore).
2. **SSLV** was configured with **three solid stages**. The satellite insertion into the intended orbit was achieved through a **liquid propulsion-based velocity trimming module**.
3. It is capable of launching **mini, micro, or nanosatellites** (10 to 500 kg mass) to a **500 km** planar orbit.

CHANDRAYAAN-2 DETECTS HIGH DENSITY PLASMA

In another finding, data from **India's Chandrayaan-2 orbiter** has shown that **plasma density in Moon's ionosphere** in the wake region — a region of the **Lunar ionosphere** that does not directly interact with the **solar wind** — is at least one order of magnitude more than that present in the day side.

What

1. **India's second lunar mission**, which was launched on 22 July 2019, carried several payloads, among which, the **Dual Frequency Radio Science (DFRS)** was designed to study the **lunar ionosphere**.
2. It was conceptualised and jointly developed by **Space Physics Laboratory (SPL)** of **Vikram Sarabhai Space Centre (VSSC)**, **UR Rao Space Centre (URSC)** and Isro Telemetry, Tracking, and Command Network (Istrac).
3. Pointing out that **Moon's ionosphere**, which derives its origin from the atmosphere believed to be **very tenuous**, Isro said, the plasma density was considered to be only a **few hundred ions** per cubic centimetre.
4. **DFRS** uses **two coherent signals** at the **S-band and X-band** of radio frequencies, transmitted from **Chandrayaan-2 orbiter** and received at the ground station in Byalalu, Bengaluru, to explore the **lunar plasma ambiance** using the **radio occultation (RO)** — a remote sensing technique used to measure physical properties of a planetary atmosphere — technique.
5. Isro said that **12 RO experiments** have been conducted in campaign mode on four different occasions based on carefully selected **geometry suitable for RO measurements**.

INDIA STRENGTHENS ITS CLIMATE TARGETS

The government, on 3 August 2022, converted two of those into official targets, which would now be part of **India's international climate commitments for 2030**. **India's NDC**, or **nationally determined commitments**, has been updated with these two promises, both of which are enhancements of **existing targets**, and would be submitted to the **UN climate body**. The **2015 Paris Agreement** requires every country to set **self-determined climate targets** which have to be progressively updated with more ambitious goals every few years.

New target

1. India will now reduce its **emission intensity by at least 45 per cent**, instead of just **33 to 35 per cent**, from 2005 levels by 2030.
2. Also, it would now ensure that **at least 50 per cent of its total electricity generation**, not just 40 per cent, would come from renewable sources by 2030.
3. The **forestry target has not been touched**.
4. Apart from these, at **least 500 GW** of India's installed electricity **generation capacity in 2030** would be based on **non-fossil fuel sources**.

India's original NDC contained three main targets for 2030:

1. **India's first NDC** was submitted in 2015, just before the **Paris Agreement was finalised**.
2. A **33 to 35 per cent reduction in emissions intensity** (or emissions per unit of GDP) from **2005 levels**
3. At **least 40 per cent of total electricity generation** to come from **non-fossil renewable sources**
4. An **increase in forest cover** to create an **additional carbon sinks** of 2.5 to 3 billion tonnes of carbon dioxide equivalent.

INDIA SUCCESSFULLY TEST FIRES ATGMS

India on 4 August 2022 successfully test-fired indigenously developed **laser-guided anti-tank guided missiles (ATGMS)** at a military installation in Maharashtra's Ahmednagar. The defence ministry said **the missiles destroyed the targets** with precision at two different ranges.

What

1. The **test firing of the missiles** was carried out at **KK Ranges in Ahmednagar** with support from Armoured Corps Centre and School.
2. The missiles hit with precision and **successfully destroyed** the targets at **two different ranges**. **Telemetry systems** have recorded the satisfactory flight performance of the missiles.
3. The **all-indigenous laser guided ATGM** employs a tandem **High explosive anti-tank (HEAT) warhead** to defeat **explosive reactive armour (ERA)** protected armoured vehicles.
4. **The ATGM** has been developed with **multi-platform launch capability** and is currently undergoing technical evaluation trials from 120 mm rifled gun of **MBT Arjun**.

INDIGENOUS VACCINE LAUNCHED FOR LSD

UNION AGRICULTURE Minister **Narendra Singh Tomar** on 10 August 2022 launched an **indigenous vaccine for lumpy skin disease (LSD)**, which has spread across states, causing deaths of hundreds of cattle since 2019. Tomar said the development of the vaccine was a milestone event as livestock, along with human resource, is the **"biggest asset of our country"**.

What

1. **Lumpi-ProVacInd**, the vaccine, has been developed by **two institutes** under the **Indian Council of Agricultural Research (ICAR) – National Equine Research Center**, Hisar (Haryana) in collaboration with the **Indian Veterinary Research Institute**, Izzatnagar (Bareilly).

- Ever since the **disease came to India in 2019**, research institutes have been engaged in developing the vaccine, the Ministry of Agriculture said. The vaccine is **100% effective**, complying with all standards.
- There are **30 crore livestock** in the country, considering the **plight of mute animals**, all possible measures should be taken to provide them relief at the earliest.
- The disease was **endemic in Africa**, but in the last 2-3 years, after entrapping the southern states of India, an outbreak/epidemic of LSD has spread to Punjab and other states of northern India. The disease occurs **mostly in cows** and somewhat less in **buffaloes**.

What is the Lumpy Skin Disease?

- According to a report by **GAVI**, the **Global Alliance for Vaccines and Immunisation**, the **Lumpy Skin Disease (LSD) disease** is caused by a virus called the **Capripoxvirus** and is “**an emerging threat to livestock worldwide**”. It is genetically related to the **goatpox** and **sheeppox virus** family.
- LSD infects cattle** and **water buffalo** mainly through vectors such as **blood-feeding insects**.
- Signs of infection include the appearance of **circular, firm nodes** on the animal’s hide or skin that look similar to **lumps**.

ASTEROIDS BRING WATER TO EARTH

In an article published in the journal Nature Astronomy on 15 August 2022, scientists from **Japan** suggest that **water and organic materials** might have been brought to our planet from the **outer edges of the solar system**. The scientists made the hypothesis after analysing samples from the **asteroid Ryugu**, collected by the Japan Aerospace Exploration Agency’s (JAXA) **Hayabusa-2 probe**, which had **brought 5.4 grams of rocks and dust** from the asteroid to Earth in December 2020.

What was the Hayabusa-2 mission?

- The **Hayabusa-2 mission** was launched in December 2014 when the spacecraft was sent on a **six-year voyage** to study the **asteroid Ryugu**.
- The spacecraft arrived at the asteroid in **mid-2018** after which it deployed **two rovers** and a **small lander onto the surface**.
- In 2019, the spacecraft fired an impactor into the asteroid’s surface to create an **artificial crater** with a **diameter of a little more than 10 metres**, which allowed it to collect the samples.
- In December 2020, **Hayabusa-2 delivered a small capsule** that contained the rock and dust samples when it was **220,000 km from the Earth’s atmosphere**, which safely landed in the South Australian outback.
- Hayabusa2’s predecessor**, the **Hayabusa mission**, brought back samples from the asteroid **Itokawa** in 2010.

What were the findings of the study?

- Since the **capsule landed on Earth**, scientists have been studying the invaluable material — weighing merely a few grams, but approximately **4.6 billion years old** — in order to explore the **foundations of the solar system**. Their analyses of the samples have helped us explore the **origins of life on our planet**.
- In June, a group of scientists found that the **materials contained amino acids**, and suggested that these **building blocks of life might have formed in space**.
- The study claimed that the **organic material** collected probably originated from the **fringes of the Solar System**, but was “unlikely to be the only source of volatiles delivered to the early Earth”.

BLUE ORIGIN LAUNCHES SUBORBITAL SPACE FLIGHT

Blue Origin launched its **next space tourist mission crew** on the **New Shepard rocket** on 4 August 2022. The mission, **called NS-22**, carried **six passengers** on a **suborbital spaceflight** from West Texas. **The suborbital mission** lifted off from **Blue Origin's Launch Site One** located near the town of Van Horn, Texas.

What

1. The crew of the rocket consisted of Dude Perfect co-founder and comedian **Coby Cotton**, entrepreneur **Mário Ferreira**, explorer and retired financial manager **Vanessa O'Brien**, retired U.S. military manager **Clint Kelly**, engineer and researcher **Sara Sabry**, and former telecommunications contractor **Steve Young**.
2. The area around Launch Site One is also known as **Corn Ranch**, located near Blue Origin's test site for **their BE-4 engine**, which will power both United Launch Alliance's Vulcan Centaur rocket and Blue Origin's New Glenn rocket.
3. Blue Origin used the **Reusable Space Ship (RSS) First Step** capsule along with the NS4 first stage booster for the **NS-22 mission**. The booster of the launch vehicle is also called the **Propulsion Module**.
4. Both **RSS First Step and the booster (NS4)** first flew into space during the **NS-14 mission** in early 2021. RSS First Step is the same spacecraft that flew on Blue Origin's first crewed flight, **NS-16**, which launched on 20 July 2021.

GAGANYAAN LEM STATIC TEST COMPLETED

The **Indian Space Research Organisation (ISRO)** on 10 August 2022 achieved an important milestone in the **Gaganyaan project** by successfully test-firing the **Low Altitude Escape Motor** of the **Crew Escape System (CES)**, from Sriharikota. CES takes away the **Crew module** in case of eventuality and rescues the astronauts. **Low Altitude Escape Motor (LEM)** is a distinctive **special purpose solid rocket motor** with four reverse flow nozzles and generates a maximum sea level thrust of **842 kN (nominal)** with a burn time of 5.98 s (nominal).

Main objective of the LEM Static Test are:

1. To **evaluate motor ballistic parameters**
2. To **validate motor subsystem performance** and to confirm the design margins.
3. To evaluate the **thermal performance of nozzle liners**; especially to confirm the erosion / ablative characteristics
4. To validate the **integrity of all interfaces**
5. To evaluate the **head-end mounted safe arm (HMSA)** based ignition system performance.
6. To evaluate side thrust due to misalignment and **variation in flow** and other functional parameters including flow reversal.

What is ISRO's Gaganyaan programme?

1. The **Gaganyaan Programme** envisages undertaking the **demonstration of human spaceflight to Low Earth Orbit (LEO)** in the short term.
2. The programme will lay the foundation for a **sustained Indian human space exploration programme** in the long run.
3. The objective of the **Gaganyaan programme** is to demonstrate the **indigenous capability** to undertake **human space flight missions** to LEO.
4. As part of this programme, **two unmanned missions** and **one manned mission** are approved by the Government of India (GoI).

PM DEDICATE 2G ETHANOL PLANT ON WORLD BIOFUEL DAY

On the occasion of **World Biofuel Day**, Prime Minister was dedicated the **2nd generation (2G) Ethanol Plant** in Panipat, Haryana to the nation on 10 August 2022. This is in line with the Prime Minister's constant endeavour **to transform the energy sector** into being **more affordable, accessible, efficient** and **sustainable**.

More about the plant

1. The **2G Ethanol Plant** has been built at an estimated cost of over Rs. 900 crore by **Indian Oil Corporation Ltd. (IOCL)** and is located close to the **Panipat Refinery**.
2. Based on **state-of-the-art indigenous technology**, the project will turn a new chapter in **India's waste-to-wealth endeavours** by utilising about 2 lakh tonnes of **rice straw (parali)** annually to generate around **3 crore litres of Ethanol** annually.
3. The project will have **zero liquid discharge**. Through the reduction in the **burning of rice straw (parali)**, the project will contribute to a reduction of **Greenhouse Gases** equivalent to about **3 lakh tonnes of Carbon Dioxide** equivalent emissions per annum.
4. India will start supplying **petrol with 20 per cent ethanol** at select petrol pumps from **April next year** and will ramp up supplies thereafter as it looks **to cut oil import dependence and address environmental issues**.
5. **E20 petrol (petrol blended with 20 per cent ethanol)** in some quantity will be available from April 2023 and the **rest to be covered by 2025**.
6. The **original target for doping 10 per cent ethanol**, extracted from sugarcane and other agri commodities, in petrol originally was November 2022.
7. **India is the world's fifth largest producer of ethanol** after the **US, Brazil, EU and China**. Ethanol worldwide is largely used for consumption but nations like Brazil and India also dope it in petrol.

DIGIYATRA INITIATIVE LAUNCHED

The **Delhi International Airport Ltd (DIAL)**, run by GMR, on 15 August 2022 announced the soft launch of the **Centre's DigiYatra initiative**, rolling out the beta version of its app for Android platforms. **DigiYatra**, the passenger processing system based on **facial recognition technology**, has been piloted at the **Delhi airport** and has had the required infrastructure set up at the airport's Terminal 3.

What is DigiYatra and how will it work?

1. **DigiYatra** envisages that travellers pass through various checkpoints at the airport through **paperless and contactless** processing, using **facial features** to establish their identity, which would be linked to the boarding pass.
2. With this technology, the entry of passengers would be automatically processed based on the **facial recognition system** at all checkpoints – including entry into the airport, security check areas, aircraft boarding, etc.
3. To use this facility, passengers will need to first download the **DigiYatra app**. Users can register on the app **using Aadhaar credentials**, followed by a **selfie with the Aadhaar card**.
4. Then, the person will have to scan his or her boarding pass with the **QR code or Bar code**, after which the credentials will be shared with the airport.
5. For entry into the airport, passengers will need to **scan their boarding passes** at the e-gate and look into the **facial recognition system camera** installed there. A similar method will be applicable for entry into other checkpoints.

How is DigiYatra being implemented?

1. Last month, the Consultative Committee of the **Ministry of Civil Aviation** met to discuss the **DigiYatra project**.
2. The project is being implemented by the **DigiYatra Foundation** — a joint-venture company whose shareholders are the **Airports Authority of India (26% stake)** and Bengaluru Airport, Delhi Airport, Hyderabad Airport, Mumbai Airport and Cochin International Airport. These five shareholders equally hold the remaining 74% of the shares.
3. The **DigiYatra Foundation** will be the custodian of the passenger **ID validation process**.

1.

MISCELLANEOUS

MILESTONE IN THE COUNTRY'S HISTORY

The **75th Independence Day** coincides with **another milestone in the country's history** — it was on **15 August 1972**, that the **Postal Identification Number (PIN)** was introduced in India, as the PIN code turns 50 on 15 August 2022. There were **23,344 post offices**, primarily in urban areas, in India at the time of Independence. But, the country was growing rapidly and the postal network had to keep pace.

How does the PIN code work?

1. The **PIN is made up of six digits**. The **first number** indicates the **postal region** — Northern, Eastern, Western, Southern; and **number 9**, which signifies the **Army Postal Service**.
2. The **second number denotes a sub-region**, and the **third represents the sorting district**. The remaining numbers **narrow the geography** further to the specific post office making the delivery.
3. The **PIN code** was meant to ease the process of **mail sorting and delivery** in a country where different places, often, have the same or similar names, and letters are written in a wide variety of languages.
4. The person behind the initiative was **Shriram Bhikaji Velankar**, additional secretary in the Union Ministry of Communications and a senior member of the Posts and Telegraphs Board.

What are some parallel systems followed world over?

1. Globally, in the **US**, the **Zone Improvement Plan (ZIP) code** was introduced 1 July 1963, under the aegis of the **Postal Service Nationwide Improved Mail Service plan** to improve the speed of mail delivery.
2. In the **UK**, the sorting of mail started getting mechanised in the mid-1960s. "The key to mechanisation is an **alphanumeric postal code** that provides for sorting by machine at every stage of handling, including the carrier's delivery route."

49TH CHIEF JUSTICE OF INDIA

President **Droupadi Murmu** on 10 August 2022 appointed **Justice U U Lalit** as the **49th Chief Justice of India** with effect from 27 August 2022. Incumbent Chief Justice of India **N V Ramana** will demit office on 26 August 2022 on **superannuation**.

What

1. In exercise of the power conferred by **clause (2) of Article 124** of the Constitution of India, the President has appointed **Justice Lalit**, judge of the Supreme Court as the Chief Justice of India.
2. **Justice Lalit**, who was elevated to the top court directly from the Bar on 13 August 2014, would be having a **short tenure of less than three months** as the CJI since he would retire on 8 November at the age of 65.
3. He will be the **second CJI**, after late **Justice S M Sikri**, who was appointed directly from the **Bar to the Supreme Court as a judge**.
4. **Late Justice Sikri** was the **13th Chief Justice of India** from January 1971 to April 1973.

14TH VICE-PRESIDENT OF INDIA

Jagdeep Dhankhar took oath as the **14th Vice-President of India** on 11 August 2022. He was administered the oath of office by President **Droupadi Murmu** at the Rashtrapati Bhavan in New Delhi. **Dhankhar succeeds M Venkaiah Naidu** whose term ended on 10 August 2022.

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What

1. By holding the **second-highest constitutional office** in the country, the vice president also **acts as the President** in case of **death, resignation or removal** of the incumbent, until a new president is elected.
2. The **vice president** serves a **five-year term** but can continue to be in office, irrespective of the expiry of the term, until the successor assumes office.
3. During this period, the **vice president has all the powers, immunities and privileges of the president** and receives emoluments and allowances payable to the president.
4. The **Constitution is silent on who performs the duties of the vice president**, when a vacancy occurs in the office before the expiry of the term, or when the **V-P acts as the President of India**.
5. The only provision in the Constitution is with regard to the vice president's function as the **chairperson of Rajya Sabha**, which is performed, during the period of such vacancy, by the **Deputy Chairperson of Rajya Sabha**, or any other member of the upper house authorised by the President of India.
6. The **vice president is the ex-officio chairperson of Rajya Sabha** and does not hold any other office of profit.

FIRST BRAIN-COMPUTER INTERFACE IMPLANTED

For the **first time ever**, a person might be able to **control a digital device directly with their brain**. A **brain-computer interface (BCI)** from endovascular BCI Company **Synchron** was implanted in a **human patient for the first time** in the United States. The procedure was conducted at the **Mount Sinai West medical centre** in New York.

What

1. This procedure was part of **Synchron's COMMAND trial**, which the company is conducting using a **first investigational device exemption (IDE)** awarded by the United States FDA.
2. The **COMMAND study** is aimed at assessing the safety and efficacy of the company's motor **BCI technology platform** in patients with severe paralysis. The goal is to enable patients to **control digital devices hands-free**.
3. **Synchron's Stendrode** is an **endovascular brain implant** designed to allow patients to **wirelessly control digital devices** using their thoughts, helping improve their functional independence.
4. The device is implanted through the **jugular vein** using the kind of surgical techniques used to treat strokes. This does not require **drilling into the skull** or **open-brain surgery**.
5. After the device is implanted, it **detects and wirelessly transmits motor** intent using a proprietary digital language. This should allow **severely paralysed patients** to control personal devices without using their limbs.
6. The **COMMAND trial** will assess the impact of everyday tasks including **texting, emailing, online shopping** and **accessing telehealth services**.

LADAKH'S HIGHEST CIVILIAN AWARD

Tibetan spiritual leader **Dalai Lama** was honoured with the '**dPal rNgam Duston**' award — the **highest civilian honour of Ladakh** — for his **immense contribution to humanity**, especially towards the union territory on 6 August 2022.

What

1. The **sixth award was conferred** by **Ladakh Autonomous Hill Development Council (LAHDC)**, Leh which celebrated the '**dPal rNgam Duston**' with great fervour on the occasion of its foundation day (5 August 2022) at **Sindhu Ghat**.
2. The **87-year-old spiritual leader**, who is on a visit to the union territory since 15 July, appreciated the gesture and stressed **maintaining communal harmony** in the region.

3. **Ladakh and Tibet** are connected by the **mighty Indus River** along with religious and cultural similarities, the **changing climatic condition** is a major cause of concern and urged everyone to be **environmentally conscious** in their act.
4. The '**dPal rNgam Duston**' marks the celebration of the remarkable contribution and achievement of the **heroes of Ladakh** and seeks to instill a **sense of pride in the younger generation**.

CASES OF LANGYA VIRUS REPORTED

Almost three years after **COVID-19** was detected in China, the country has reported cases of **another zoonotic virus** called **Langya virus**. The new type of **animal-derived Henipavirus** has so far infected people in the Shandong and Henan provinces of China. Meanwhile, this new type of Henipavirus is also called **Langya Henipavirus** or the **LayV**.

What

1. It can cause **severe illness in animals and humans**, and at present, there are **no licensed drugs or vaccines** meant for humans.
2. A **zoonotic disease** that spreads **from animals to humans**, the **Langya virus** was first detected in the northeastern provinces of Shandong and Henan in 2018 and was officially detected recently.
3. According to scientists, **several other types of Henipavirus** like **Hendra, Nipah, Cedar, Mojiang** and the **Ghanaian bat virus** are known to infect humans and cause fatal diseases. However, other related **henipaviruses** have been detected in bats, rodents, and shrews.
4. The study found that **Langya is most phylogenetically** related to **Mojiang henipavirus**, which was discovered in southern China. Meanwhile, the **Langya virus is known to cause fever**.

How Langya virus was found?

1. The newly detected **Langya** was discovered in **eastern China** during surveillance testing of patients who had fever along with a recent history of animal exposure.
2. It was identified and isolated from the **throat swab sample** of one of those patients.
3. The scientists who conducted the study pointed out that **this newly discovered Henipavirus** is associated with some febrile cases, and the infected people have symptoms including **fever, fatigue, cough, anorexia, myalgia, and nausea**.

FIFA BANNED AIFF

The **International Federation of Association Football (FIFA)** suspended the country's top administrative organisation, the **All India Football Federation (AIFF)**, for "**undue influence from third parties**". The **Bureau of the FIFA council**, which passed the judgment, also took away the country's rights to hold the **FIFA U-17 Women's World Cup 2022**, which was scheduled to be held from October 11-30.

What events led to the ban?

1. The **current set of troubles for Indian football** began after the **erstwhile AIFF president**, Praful Patel, who was also a **FIFA council member**, refused to relinquish his post as the **head of football in the country**.
2. His **excuse for not exiting the stage** was the long-drawn out pandemic, coupled with a court case regarding the AIFF constitution.
3. But on 18 May, the **Supreme Court intervened**, and removed Patel from his post. The SC also appointed a **Committee of Administrators (COA)** to run the AIFF.
4. The **setting up of this COA** is where the contentious relationship with FIFA began, which eventually led to the ban.

FACT TO REMEMBER:

1. **WEAPONS OF MASS DESTRUCTION BILL PASSED**
2. **75 RAMSAR SITES IN 75TH YEAR OF INDEPENDENCE**
3. **INDIA KEEN TO JOIN A GLOBAL ALLIANCE MSP**
4. **GREATER MALE CONNECTIVITY PROJECTS LAUNCHED**
5. **ISRO FACES SETBACK AS MAIDEN SSLV MISSION**
6. **CHANDRAYAAN-2 DETECTS HIGH DENSITY PLASMA**
7. **INDIGENOUS VACCINE LAUNCHED FOR LSD**
8. **ASTEROIDS BRING WATER TO EARTH**
9. **GAGANYAAN LEM STATIC TEST COMPLETED**
10. **DIGIYATRA INITIATIVE LAUNCHED**

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