

My Notes....

NATIONAL

GOVT. EXTEND TERM OF OBC'S COMMISSION

On 6 July 2022, the Centre extended the **tenure of The Commission** to Examine **Sub-categorisation of Other Backward Classes (OBCs)** headed by Justice **G Rohini**, former Chief Justice of Delhi High Court. The Commission, constituted nearly **five years ago**, has **got 10 extensions so far**, and now has until 31 January next year to submit its report.

What is sub-categorisation of OBCs?

1. The idea is **to create sub-categories** within the larger group of OBCs for the purpose of reservation.
2. **OBCs are granted 27% reservation in jobs and education** under the central government.
3. This has been a legal debate for other reservation categories too: in September last year, a **Constitution Bench of the Supreme Court** reopened the debate on **sub-categorisation of Scheduled Castes and Scheduled Tribes** for reservations.
4. For OBCs, the debate arises out of the perception that only a few affluent communities among the over 2,600 included in the **Central List of OBCs** have secured a major part of the **27% reservation**.
5. The argument for creating **sub-categories within OBCs** is that it would ensure **"equitable distribution"** of representation among all OBC communities.
6. It was to examine this that the **Rohini Commission** was constituted on 2 October 2017.

What is the Commission's brief?

1. **To examine the extent of inequitable distribution of benefits of reservation** among the castes or communities included in the broad category of OBCs with reference to such classes included in the Central List.
2. To work out the **mechanism, criteria, norms and parameters** in a scientific approach for sub-categorisation within such OBCs.
3. To take up the exercise of **identifying the respective castes or communities** or sub-castes or synonyms in the Central List of OBCs and classifying them into their respective sub-categories. A **fourth term of reference was added on 22 January 2020**.
4. To study the **various entries in the Central List of OBCs** and recommend correction of any repetitions, ambiguities, inconsistencies and errors of spelling or transcription

THE NATIONAL EMBLEM UNVEILED

On 11 July 2022 morning, Prime Minister unveiled the **National Emblem** cast on the roof of the new Parliament building. Work is underway to meet the October-November 2022 deadline for completion of the work.

The National Emblem

1. **Cast at the top of the Central Foyer** of the new Parliament building, the **6.5-metre-high National Emblem** is made of **bronze**, and weighs **9,500 kg**.

2. A supporting structure of steel weighing **around 6,500 kg** has been constructed to support the Emblem.
3. The concept sketch and process of casting of the **National Emblem** on the roof of the building went through **eight different stages** of preparation from **clay modelling/ computer graphics** to bronze casting and polishing, officials said.

Flashback

1. The existing building was designed by **Edwin Lutyens** and **Herbert Baker** who were responsible for the **planning and construction of New Delhi**.
2. It was inaugurated in 18 January 1927, by then Governor General of India **Lord Irwin**. The foundation stone for the new building was laid by the Prime Minister in December 2020 nearly a century after the foundation for the existing Parliament was laid by the Duke of Connaught on 12 February 1921.
3. The new Parliament building will “most likely be completed in time by **October-November 2022**”, in time to hold the winter session this year, to coincide with **75th year of India’s independence**.

NIRF RANKINGS 2022

The Indian Institute of Science (IISc) Bengaluru has **topped the nation** in the **2022 National Institutional Ranking Framework (NIRF)** University category. The NIRF rankings were revealed by the Union Education Minister Dharmendra Pradhan on 15 July 2022, in a virtual session.

More about ranking

1. While IISc and **JNU (rank 2)** continue to retain their top slots, this year, **Jamia Millia Islamia has improved its position** from rank 6 last year to rank 3 by replacing **Banaras Hindu University** which has now slipped to **rank 6**. **Calcutta University** was **ranked fourth** in 2021 which have now **slumped to rank 8**.
2. **Delhi University’s colleges** have dominated the college rankings; the varsity has this year too failed to enter the top 10 club. **VIT Vellore** and **Jadavpur University** positions have improved this year.
3. The **NIRF rankings** were announced in **11 categories**, including **overall**, University, Management, College, Pharmacy, Medical, Engineering, Architecture, ARIIA (Atal Ranking of Institutions on Innovation Achievements), Law and Research Institutions.
4. The **National Institutional Ranking Framework (NIRF)** was approved by the MHRD and launched by Honourable Minister of Human Resource Development on **29th September 2015**.
5. This **framework outlines a methodology** to rank institutions across the country. The methodology draws from the overall recommendations broad understanding arrived at by a **Core Committee set up by MHRD**, to identify the **broad parameters** for ranking various universities and institutions.

INDIA RANKINGS 2022 National Institutional Ranking Framework	
Overall	
Indian Institute of Technology Madras	1
Indian Institute of Science, Bengaluru	2
Indian Institute of Technology Bombay	3
Indian Institute of Technology Delhi	4
Indian Institute of Technology Kanpur	5
Indian Institute of Technology Kharagpur	6
Indian Institute of Technology Roorkee	7
Indian Institute of Technology Guwahati	8
All India Institute of Medical Sciences, New Delhi	9
Jawaharlal Nehru University, New Delhi	10

6. The parameters broadly cover “**Teaching, Learning and Resources**,” “**Research and Professional Practices**,” “**Graduation Outcomes**,” “**Outreach and Inclusivity**,” and “**Perception**”.

INDIA IN GLOBAL GENDER GAP INDEX 2022

The **Global Gender Gap Index for 2022** was released by the **World Economic Forum (WEF)** on 13 July 2022, and it **ranks India at 135 out of 146 countries**. In 2021, India was ranked 140 out of 156 countries. **Iceland retained its place** as the **world's most gender-equal country**, followed by Finland, Norway, New Zealand and Sweden.

India in the Index

- Political Empowerment** - This includes metrics such as the **percentage of women in Parliament**, the **percentage of women in ministerial positions** etc. Of all the sub-indices, this is where **India ranks the highest (48th out of 146)**. India's score is above the global average in this category.
- Economic Participation and Opportunity** - This includes metrics such as the **percentage of women who are part of the labour force, wage equality for similar work**, earned income etc. Here, too, India ranks a lowly 143 out of the 146 countries in contention even though its score has improved over 2021 from 0.326 to 0.350.
- Educational Attainment** - This sub-index includes metrics such as **literacy rate** and the **enrolment rates** in **primary, secondary and tertiary education**. Here **India ranks 107th out of 146**, and its score has marginally worsened since last year. In 2021, **India was ranked 114 out of 156**.
- Health and Survival** - This includes two metrics: **the sex ratio at birth (in %)** and **healthy life expectancy (in years)**. In this metric, **India is ranked the last (146) among all the countries**. Its score hasn't changed from 2021 when it was ranked **155th out of 156 countries**.

What is the Global Gender Gap Index?

- The **Global Gender Gap index** “benchmarks the current state and evolution of gender parity across **four key dimensions (Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment)**”.
- It is the **longest-standing index**, which tracks progress towards closing these gaps over time since its inception in 2006.
- On each of the **four sub-indices** as well as on the overall index the GGG index provides **scores between 0 and 1**, where **1 shows full gender parity** and **0 is complete imparity**.
- The cross-country comparisons aim to support the identification of the most effective policies to **close gender gaps**.

FIRST NATIONAL FOOD SECURITY RANKING

Union Food Minister Piyush Goyal released on 5 July 2022 the **first State Ranking Index** for implementation of the **National Food Security Act, 2013**. Among the 20 big states and Union Territories (UTs), **Odisha topped the list** while **Goa came last**. **Tripura ranked first** and **Ladakh came last** among the **14 smaller states and UTs**.

What

- The **states and UTs** were ranked based on **three parameters** for the year 2022. The first measures “**coverage of NFSA, rightful targeting, and implementation of all provisions under NFSA**”.

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2. The second “**analyzes the delivery platform** while considering the allocation of foodgrains, their movement, and last-mile delivery to **Fair Price Shops (FPS)**”. The third “**focuses on nutrition initiatives of the department**”.
3. Overall, **Odisha, Uttar Pradesh** and **Andhra Pradesh** scored the highest and secured the **top three positions in the Index**.
4. The states performed very well on all the parameters and indicators governing the implementation of **NFSA through TPDS (targeted public distribution system)**, says the State Ranking Index for NFSA report.
5. Among the **special category states** (the northeastern, Himalayan, and the Island states), **Tripura, Himachal Pradesh** and **Sikkim** obtained the top positions.
6. The **NFSA** provides a **legal right to persons** belonging to “**eligible households**” to receive foodgrains at subsidised price – rice at Rs 3/kg, wheat at Rs 2/kg and coarse grain at Re 1/kg — under the TPDS. These are called **central issue prices (CIPs)**.

CBI JOINED INTERPOL’S ICSE INITIATIVE

India’s **Central Bureau of Investigation** has joined the **Interpol’s International Child Sexual Exploitation (ICSE) initiative** that will allow it to collaborate with investigators in other countries for **detecting child sex abuse online** and identifying abusers, victims, and crime scenes from audio-visual clips using specialised software. **India is the 68th country** to have access to this database and software.

What is the ICSE?

1. The **ICSE database** uses video and image comparison to analyse **Child Sex Exploitation Material (CSEM)** and make connections between victims, abusers and places.
2. As of July 2022, **over 30,000 victims of child abuse** and over 13,000 criminals have been identified by the Interpol using this database and software.
3. The database **avoids duplication of effort** and saves precious time by letting investigators know whether a series of images has already been discovered or identified in another country, or whether it has similar features to other images.
4. Using the image and video comparison software, the investigators attempt to **identify locations of markers** visible in a piece of media.
5. This can be through the signage nearby, the kind of artwork, photos on a wall, etc. The detectives in all **68 countries of the grouping** can further exchange information across the world.

What is Interpol?

1. **Interpol** is the **world’s largest international police organisation** with 195 member countries, and is **headquartered in Lyon, France**.
2. Each member country hosts an **Interpol National Central Bureau** that connects their national law enforcement to it and **in India the CBI is that nodal agency**.

SUPREME COURT CALL FOR REFORM IN THE BAIL LAW

On 11 July 2022, the **Supreme Court** underlined that “**there is a pressing need**” for reform in **the law related to bail** and called on the government to consider framing a special legislation **on the lines of the law in the United Kingdom**.

What is the UK law?

1. The **Bail Act of the United Kingdom, 1976**, prescribes the procedure for granting bail.

2. A key feature is that one of the aims of the legislation is “**reducing the size of the inmate population**”. The law also has provisions for ensuring legal aid for defendants.
3. The Act recognises a “**general right**” to be granted bail. Its **Section 4(1)** raises the presumption of bail by stating that the law applies to a person who shall be granted bail except as provided in **Schedule 1 to the Act**.
4. **For rejecting bail**, the prosecution must show that grounds exist for believing the defendant on bail **would not surrender to custody**, would commit an offence while on bail, or would interfere with witnesses or otherwise obstruct the course of justice; unless the defendant must be detained for his own welfare or protection; or in other circumstances.

What is the law on bail?

1. The **CrPC does not define the word bail** but only categories offences under the Indian Penal Code as ‘**bailable**’ and ‘**non-bailable**’.
2. The CrPC **empowers magistrates to grant bail** for bailable offences as a matter of right.
3. This would involve release on furnishing a bail bond, without or without security. **Non-bailable offences are cognisable**, which enables the police officer to arrest without a warrant. In such cases, a magistrate would determine if the accused is fit to be released on bail.

INTERNATIONAL

INDIA ELECTED TO UNESCO PANEL

India has been elected to the **Intergovernmental Committee of UNESCO’s 2003 Convention** for the Safeguarding of the **Intangible Cultural Heritage (ICH)** for the 2022-2026 cycles, the government said on 7 July 2022. **India has served as a member of the ICH Committee twice** — from 2006 to 2010 and from 2014 to 2018.

What

1. **India** will be a part of **two prominent Committees of UNESCO** — **Intangible Cultural Heritage (2022-2026)** and **World Heritage (2021-2025)**.
2. The **core functions** of the **Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritage** are to promote the objectives of the convention, provide guidance on best practices and make recommendations on measures for the **safeguarding of the intangible cultural heritage**.
3. It also examines requests submitted by States Parties for the **inscription of intangible heritage** on the Lists as well as proposals for programmes and projects. The committee is also in charge of granting international assistance.
4. The **Intergovernmental Committee of the 2003 Convention** comprises **24 members** and is elected in the General Assembly of the Convention according to the principles of equitable geographical representation and rotation. States Members to the Committee are elected for a **term of four years**.
5. For its **2022-2026 terms**, India has formulated a clear vision for the **protection and promotion of the intangible cultural heritage of humanity**.
6. Some of the **priority areas that India will focus** upon include **fostering community participation, strengthening international cooperation** through intangible heritage, promoting academic research on intangible cultural heritage and aligning the work of the Convention with the **UN Sustainable Development Goals**.

7. As a member of the intergovernmental committee, India will have the opportunity to closely monitor the **implementation of the 2003 Convention**.

INDIA'S NEW SHERPA FOR G20

The Centre on 7 July 2022 appointed **Amitabh Kant**, former chief executive officer (CEO) of the government's policy think tank NITI Aayog, as **India's Sherpa** for the **Group of Twenty (G20) grouping**, replacing Minister of Commerce and Industry **Piyush Goyal**.

What

1. The appointment comes ahead of **India's G20 Presidency** from **1 December 2022, to 30 November 2023**, culminating in the **first-ever G20 summit** to be organised by the country in 2023.
2. **G20 is the premier forum** for the world's largest industrialised and emerging economies for international economic cooperation and **plays a pivotal role** in global economic governance.
3. **Kant** will be the personal representative of the head of the government at the **G20 summit**.
4. **As Sherpa**, Kant will be responsible for **pre-summit meetings and negotiations** with partner countries on various policy issues.

FIRST I2U2 SUMMIT KICKS OFF

The leaders of the **India, Israel, United States** and the **United Arab Emirates** on 14 July 2022 held their **first virtual summit** as part of a new initiative under the banner of **I2U2**, a collection of countries that have pledged **greater collaboration**. The idea was hatched last year in Washington, at the home of the UAE ambassador, according to Israeli Prime Minister Yair Lapid.

In a joint statement

1. **The UAE** – home to the **International Renewable Energy Agency (IRENA)** and **host of COP28** in 2023 – will **invest \$2 billion USD** to develop a series of **integrated food parks** across India that will incorporate state-of-the-art climate-smart technologies to reduce food waste and spoilage, conserve fresh water, and employ renewable energy sources.
2. **India** will provide **appropriate land** for the project and **will facilitate farmers' integration** into the food parks.
3. **US and Israeli** private sectors will be invited to lend their expertise and offer **innovative solutions** that contribute to the overall **sustainability of the project**.
4. These investments will help **maximize crop yields** and, in turn, help tackle food insecurity in South Asia and the Middle East.
5. The **I2U2 Group** will "**advance**" a **hybrid renewable energy project** in Gujarat consisting of **300 megawatts (MW)** of **wind** and **solar** capacity complemented by a battery energy storage system.
6. The **US Trade and Development Agency** funded a feasibility study for the \$330 million USD project.

INDIA-AUSTRALIA COLLABORATION ON CRITICAL MINERALS

India and Australia on 4 July 2022 decided to strengthen **their partnership** in the field of projects and supply chains for **critical minerals**. As part of his **six-day tour of Australia**, Union Coal and Mines Minister Pralhad Joshi met his counterpart after which Australia

confirmed that it would “**commit A\$5.8 million** to the three-year **India-Australia Critical Minerals Investment Partnership**”.

What are critical minerals?

1. **Critical minerals** are elements that are the **building blocks** of **essential modern-day technologies**, and are at risk of supply chain disruptions.
2. These minerals are now used everywhere from making **mobile phones, computers to batteries, electric vehicles** and **green technologies** like solar panels and wind turbines. Based on their individual needs and strategic considerations, different countries create their own lists.
3. However, such lists mostly include **graphite, lithium** and **cobalt**, which are used for making EV batteries; **rare earths** that are used for making magnets and silicon which is a key mineral for making computer chips and solar panels.
4. **Aerospace, communications** and **defence industries** also rely on several such minerals as they are used in manufacturing fighter jets, drones, radio sets and other critical equipment.

ECONOMY

SARFAESI ACT INVOKED AGAINST GTL

Banks have invoked the **Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (Sarfaesi) Act** against telecom infrastructure provider GTL to recover their pending dues. The recovery action has been initiated by **IDBI Bank** on behalf of lenders, whose total exposure to GTL stood at Rs 7,250 crore as of 31 December 2021.

Why was such a law needed?

1. Before the law was **enacted in December 2002**, banks and other financial institutions were forced to take a **lengthy route to recover their bad debts**.
2. The lenders would appeal in civil courts or designated tribunals to get hold of ‘**security interests**’ to recovery of defaulting loans, which in turn made the recovery slow and added to the growing list of lender’s non-performing assets.
3. The Act comes into play if a **borrower defaults** on his or her payments for more than six months. The lender then can send a notice to the borrower to clear the dues within 60 days.
4. In case that doesn’t happen, the financial institution has the **right to take possession** of the secured assets and sell, transfer or manage them.
5. The defaulter, meanwhile, has recourse to move an **appellate authority** set up under the law **within 30 days of receiving a notice from the lender**.

What is the Sarfaesi Act?

1. The **Sarfaesi Act of 2002** was brought in to **guard financial institutions against loan defaulters**.
2. To recover their **bad debts**, the banks under this law can take control of securities pledged against the loan, manage or sell them to recover dues without court intervention.
3. The law is **applicable throughout the country** and covers all assets, movable or immovable, promised as security to the lender.

6. According to a 2020 Supreme Court judgment, **co-operative banks can also invoke Sarfaesi Act**. According to the Finance Ministry, the **non-banking financial companies (NBFCs)** can initiate recovery in Rs 20 lakh loan default cases.

DPIIT'S START-UP RANKINGS

Gujarat was listed as “**best performer**” for the **third time** in a row in the **Department for Promotion of Industry and Internal Trade's (DPIIT) States' Start-up Rankings 2021**, results of which were released by Union Minister for Commerce and Industry, Textiles and Consumer Affairs, Piyush Goyal in New Delhi on 4 July 2022.

According to the release

1. The state was recognised for “**Best Practices**” like **financial assistance to over 160 startups**, sensitising over 300 potential private investors for investing in startups, and sensitising over 150 Government officials for engaging with startups.
2. The **2021 ranking** was based on **seven broad reform areas** consisting of **26 action points** ranging from **Institutional support, Fostering innovation & entrepreneurship, Access to market, Incubation support, Funding support, Mentorship support, and capacity building of enablers**.
3. **Startup India team** undertook an extensive user feedback exercise and focused towards on-ground implementation of reforms in the state.
4. Today, India has become the **third largest start-up ecosystem in the world**, with over 72,000 recognized start-ups and over **100 unicorns**.
5. Recognizing the contribution of startups to the economy of India, the Prime Minister announced **16 January as National Startup Day**.

Flashback

1. **DPIIT** launched the **State Startup Ranking Framework** in 2018 to support **innovation and entrepreneurship** and **strengthen the ecosystem** in the states.
2. The Prime Minister of India launched the “**Startup India**” initiative on 16 January 2016, with the aim of **building a strong startup and entrepreneurial ecosystem, promoting sustainable economic growth and generating massive employment opportunities**.

INTERNATIONAL TRADE SETTLEMENTS IN RUPEES

The **Reserve Bank of India** on 11 July 2022 announced its decision **to allow trade settlements between India and other countries in rupees**. While the move is seen to benefit trading **primarily with Russia**, it is also likely to help check dollar outflow and slow rupee depreciation to a ‘**very limited extent**’.

How will the model work?

1. To **settle trade transactions with any country**, banks in India will open **Vostro accounts** (an account that a correspondent bank holds on behalf of another bank — for example HSBC vostro account is held by SBI in India) of correspondent bank/s of the partner country for trading.
2. **Indian importers can pay for their imports** in rupee into these accounts. These earnings (from imports) can then be used to pay Indian exporters in Indian rupee.
3. As of today, if a **company exports or imports**, transactions are always in a **foreign currency** (excluding with countries like Nepal and Bhutan).
4. So in case of imports, the Indian company has to pay in a **foreign currency** (mainly dollars and could also include currencies like pounds, Euro, yen etc.).

5. The **Indian company** gets paid in **foreign currency in case of exports** and the company converts that foreign currency to rupee since it needs rupee for its needs, in most of the cases.
6. The RBI order has not overtly said so; this arrangement is likely to be used only for Russia.

SCIENCE AND TECHNOLOGY

LIGO WILL BE BACK IN 2023

The **Laser Interferometer Gravitational-wave Observatory (LIGO)** is scheduled to begin its **fourth run** of operations in **March 2023** after over two years of maintenance work and upgrades. During its latest operational run, **LIGO and its two detectors** will work in tandem with the **Virgo Interferometer in Italy** and the **KAGRA observatory in Japan**.

What

1. But this time, after two years of major upgrades to **LIGO's more sensitive detectors** will be able to sense even "**fainter**" gravitational waves than before.
2. **Gravitational waves are space-time ripples** caused by the **most explosive and energetic processes** in the universe.
3. **Their existence** was initially predicted by **Albert Einstein in 1916** in his **general theory of relativity**.
4. The theory posits that **massive accelerating objects like neutron stars** would disrupt the **space-time continuum** and send "**waves**" in all directions.
5. These **gravitational waves would travel at the speed of light** and they would also carry information about what caused them, along with information that could help scientists understand the nature of gravity itself.

Flashback

1. **LIGO is the world's largest gravitational wave observatory** and comprises of **two massive laser interferometers** that are located about 3,000 kilometres apart. It is used to **detect and understand** the origins of gravitational waves.
2. **Interferometers** can **calculate very small measurements** that cannot be done using conventional equipment.
3. For example, **LIGO's interferometers** can measure a distance that is **1/10,000 smaller than the width of a proton**. This is why scientists were able to confirm the existence of **gravitational waves for the first time in 2016** with the help of LIGO and Virgo.
4. With its latest upgrades, LIGO is calibrated to be sensitive enough to detect **gravitational waves from two neutron stars colliding** over 619 million light-years.

NEW 'EXOTIC' SUB-ATOMIC PARTICLES DISCOVERED

The **Large Hadron Collider beauty (LHCb) experiment** — which is investigating the slight differences between **matter and antimatter** by studying a type of particle called the "**beauty quark**", or "**b quark**" — has observed three never-before-seen particles, CERN announced on 5 July 2022.

More about particles

1. The three "exotic" additions — a new kind of "**pentaquark**" and the **first-ever pair of "tetraquarks"** — to the growing list of new hadrons found at the LHC will help physicists better understand **how quarks bind together** into these composite particles, CERN said in a release.

2. **CERN** — Conseil Européen pour la Recherche Nucléaire — is the original name of the **European Organisation for Nuclear Research**, which runs the **particle accelerator** complex that houses the LHC, the **world's largest and most complex collider**.
3. The LHC, **re-ignited after three years in April**, was cranked up to unprecedented levels of energy on 5 July 2022, and has begun **smashing together protons** at almost the **speed of light**, which could throw up “new” physics beyond the **Standard Model**.

What are quarks?

1. **Quarks** are elementary particles that come in **six “flavours”**: **up, down, charm, strange, top, and bottom**.
2. They usually combine together in **groups of twos and threes to form hadrons** such as the **protons and neutrons** that make up **atomic nuclei**.
3. But they can also **combine into four-quark and five-quark particles**, called **tetraquarks** and **pentaquarks**.
4. These exotic hadrons were predicted by theorists about six decades ago — around the same time as **conventional hadrons** — but they have been observed by LHCb and other experiments only in the past 20 years.

IS4OM INAUGURATED

India has given a boost to **self-reliance in safeguarding its space assets** with **ISRO System for Safe and Sustainable Space Operation and Management (IS4OM)**. Union Minister of State for Space Jitendra Singh inaugurated the IS4OM in Bengaluru on 11 July 2022.

More about IS4OM

1. **IS4OM** is a system conceived with a **holistic approach** towards **ensuring safety and sustainability of the space environment** while reaping the benefits of **sustainable utilisation of outer space** for national development.
2. It's part of the **space situational awareness (SSA) programme** to identify **space debris** and monitor them.
3. It's to identify the **potential collision of our active satellites** with other space objects and **avoid collisions with proper maneuvering** to save our space assets (satellites).
4. Space agency said **concurrent processing of data** from the observational facilities for **space objects' orbit determination, correlation and catalogue generation** will take place here.

What is Space Debris?

1. **Space debris** consists of **rocket bodies** that are used **to launch satellites, defunct satellites, materials released during mission operations**, fragments from on-orbit breakups of space objects, and **fragments from Anti-Satellite (ASAT) tests**.
2. These space objects move with an **average speed of 27,000 km per hour** in Low Earth Orbits; therefore, a collision with even a centimetre sized tiny fragment can be catastrophic to an operational space asset.
3. These orbiting space debris pose a threat to **about 3,000 operational satellites presently in orbit**, used for critical modern communication, commerce, travel and security systems.

5. In addition, as part of **IS4OM**, dedicated labs have also been set up for **space debris mitigation and remediation**, compliance verification of **UN/Inter-Agency Space Debris Coordination Committee (IADC)** guidelines and various R&D activities.
6. The R&D activities encompass **space object fragmentation** and **break up modelling, space debris population** and **micrometeoroid environment modeling, and Near Earth Objects**.
7. **IS4OM will boost our self-reliance** ('atmanirbharata') in protecting our own space assets and also meeting **UN directions on Debris management**.
8. Currently, **millions of pieces of space debris** together with thousands of operational satellites are orbiting the Earth at **different altitudes above the Earth**.

FIRST LOOK OF THE UNIVERSE

The **United States space research agency NASA** said in a release on 11 July 2022 that its **James Webb Space Telescope (JWST)** has produced the deepest and sharpest **infrared image of the distant universe** that has ever been seen, heralding a major event in astronomy. The **JWST is the largest and most powerful telescope** ever built.

What can be seen in the image?

1. Calling it "**Webb's First Deep Field**", NASA said the image shows galaxies that were once invisible to us. The image shows **shining objects packed together** in hues of blue and orange. Swirling, faraway galaxies — similar to how the Milky Way looks — are also visible.
2. **Light travels at 186,000 miles per second**. And that light that you are seeing on one of those little specks has been travelling for over 13 billion years.
3. Taken by **Webb's Near-Infrared Camera (NIRCam)**, the image was made by combining various images at **different wavelengths**. The image shows the galaxy cluster called **SMACS 0723**, as it appeared **4.6 billion years ago**.
4. The **combined mass of the galaxy cluster** acts as a **gravitational lens**, magnifying much more distant galaxies behind it.
5. This will help researchers in learning more about the **galaxies' masses, ages, histories, and compositions**, as Webb seeks out the earliest galaxies in the universe.



What is NASA's James Webb Telescope?

1. The telescope has been in the works for years. NASA led its development with the **European Space Agency (ESA)** and the **Canadian Space Agency**.
2. It was launched aboard a rocket on 25 December 2021, and is currently at a point in space known as the **Sun-Earth L2 Lagrange point**, approximately **1.5 million km beyond Earth's orbit** around the Sun.
3. **Lagrange Point 2 is one of the five points** in the orbital plane of the Earth-Sun system.

4. Named after **Italian-French mathematician Joseph-Louis Lagrange**, the points are in any revolving two-body system like Earth and Sun, marking where the gravitational forces of the two large bodies cancel each other out.

INDIA'S FIRST 3D PRINTED ROCKET ENGINE FACTORY

Space tech startup **Agnikul Cosmos** on 13 July 2022 inaugurated **India's first-ever facility** to manufacture **3D-printed rocket engines** in Chennai. Named **Rocket Factory 1**, it was unveiled by Tata Sons chairman N Chandrasekaran and Isro chairman S Somanath in the presence of Pawan Goenka, the chairman of **IN-SPACE (Indian National Space Promotion and Authorization Centre)**.

What

1. The 10,000-square-foot facility is located at **IIT-Madras Research Park**. It will have a 400mm x 400mm x 400mm metal 3D-printer from EOS that will enable end-to-end manufacturing of a rocket engine under one roof
2. This is a milestone for us as we go from **R&D phase** into core manufacturing with the opening of this facility, and begin productionizing the **launch vehicle engine making**.
3. **Agnikul was founded in 2017** by Srinath Ravichandran, Moin SPM and SR Chakravarthy (professor of IIT-Madras).
4. The startup is making **Agnibaan**, a customizable, **2-stage launch vehicle**, capable of taking up to **100 kg payload to orbits around 700 km high** (low Earth orbits) and enables plug-and-play configuration.
5. In December 2020, **Agnikul had signed an agreement** with Indian Space Research Organisation (ISRO) under the **IN-SPACE initiative** to have access to the space agency's expertise and its facilities to build rocket engines.

IAMAI DISSOLVED THE BACC

The **Internet and Mobile Association of India (IAMAI)**, the industry body representing top Internet companies and tech platforms, has dissolved a key unit set up four years ago to do public **advocacy for the cryptocurrency and blockchain sector**, citing regulatory uncertainty.

What is this unit?

1. The **Blockchain and Crypto Assets Council (BACC)**, which represents **Indian crypto industry players** was formed to advocate the crypto industry's arguments to regulatory bodies such as the **Reserve Bank of India (RBI)**. The central bank has been deeply sceptical of private cryptocurrencies.
2. In a statement issued on 14 July 2022, IAMAI said it was **forced to take the decision** in light of the fact that a resolution of the **regulatory environment** for the industry is still very uncertain, and that the association would like to utilise its limited resources for other emerging digital sectors.
3. It makes a more immediate and direct contribution to digital India, notably, deepening financial inclusion and promoting **Central Bank issued Digital Currency (CBDC)**.
4. The RBI has taken a view that **private cryptocurrencies threaten the monetary stability** of the country.
5. RBI Governor Shaktikanta Das noted that cryptocurrencies "**are a clear danger**", and that the country must be "**mindful of the emerging risks on the horizon**". Meanwhile, the RBI has been working towards launching its own digital currency.
6. The proposal to dismantle the BACC had been under consideration at the IAMAI for some time given the **increasing tightening of norms for crypto players** by the government and the stance taken by the RBI.

MISCELLANEOUS

VIRGIN ORBIT LAUNCHES FIRST NIGHT MISSION

Billionaire **Richard Branson's Virgin Orbit** has successfully launched **seven satellites to low Earth orbit** for the United States Space Force (USSF) in its fourth consecutive satellite launch mission, and first conducted during night. The launch, named **Straight Up**, on 1 July 2022, and concluded with the successful deployment of all seven payloads on 2 July 2022.

What

1. Virgin Orbit's fully mobile **LauncherOne system** conducted its first ever evening flight from a bare concrete pad and a runway at the **Mojave Air and Space Port in California**.
2. The launch reached an orbit approximately **500 km above the Earth's surface** at 45 degrees inclination.
3. This was **Virgin Orbit's second time reaching that inclination** -- an orbit that no other system has ever reached from the West Coast.
4. The **seven satellites** deployed by the **Straight Up** launch are from multiple government agencies and will facilitate experiments intended to demonstrate **innovative spacecraft technologies**, new approaches for satellite applications, and **Earth atmospheric science**.
5. The launch's name, **Straight Up**, is inspired by American singer Paula Abdul's breakthrough song from her debut studio album, Forever Your Girl.
6. The company's next international launch, scheduled later this year, is in collaboration with the **UK Space Agency**, the **Royal Air force**, and **Space Port Cornwall**. This will be the **first orbital launch ever from UK soil**.

PM UNVEILED STATUE OF ALLURI SITHARAMA RAJU

PM was unveiled a **30-foot-tall bronze statue** of freedom fighter **Alluri Sitharama Raju** as part of his visit to Bhimavaram, Andhra Pradesh, on 4 July 2022. The year-long celebrations of the **freedom fighter's 125th birth anniversary** began on the same day. As part of '**Azadi Ka Amrit Mahotsav**', a campaign to mark **75 years of Indian independence**

Who was Alluri Sitharama Raju?

1. He is believed to have been born in present-day **Andhra Pradesh in 1897 or 1898**, and is known for **leading guerrilla resistance against the British** in the region at a very early age.
2. At the age of 18, Raju became a **sanyasi (hermit)** and began going into the hill and tribal areas of the region.
3. His **austerity, knowledge of astrology and medicine**, and the ability to **tame wild animals** gained him the respect of locals. A mystical element was therefore attached to his persona.

'MATHEMATICS NOBEL' AWARDED

Ukrainian mathematician Maryna Viazovska, chair of **Number Theory** at École polytechnique fédérale de Lausanne (EPFL) in Switzerland, was on 5 July 2022 named as one of **four recipients of the 2022 Fields Medal**, an honour that is often described the **Nobel Prize in mathematics**.

What

- The **Fields Medal** is awarded by the **International Mathematical Union (IMU)**, an international non-governmental and **non-profit scientific organisation** that aims to promote international cooperation in mathematics.
- The IMU recognised **Viazovska's work** on the sphere-packing problem in 8 and 24 dimensions, EPFL said in an announcement. Previously, the problem had been solved for only **three dimensions or fewer**.
- The other winners were **French mathematician Hugo Duminil-Copin** of the University of Geneva; **Korean-American June Huh of Princeton**; and **Briton James Maynard of the University of Oxford**.
- Viazovska, 37**, is **only the second female Fields Medalist**, after the Iranian Maryam Mirzakhani in 2014.

Fields Medal

- The **Fields Medal** is awarded **every four years** to **one or more mathematicians** under the **age of 40** in recognition of "**outstanding mathematical achievement** for existing work and for the promise of future achievement".
- Among the **more than 60 mathematicians** who have been awarded the **Fields Medal since 1936**, there are two of Indian origin — **Akshay Venkatesh** of the Institute for Advanced Study at Princeton, who won in 2018, the last time the honour was announced, and **Manjul Bhargava** of the Department of Mathematics at Princeton University, in 2014.

CLOUDBURSTS OCCUR MORE IN PLACES

Sudden, "**highly-localised rains**" in Amarnath, Jammu and Kashmir, on 8 July 2022 caused **flooding** and led to the deaths of at least 16 people and injuries to more than 20 others. Those who died were at a camp near the cave, a **site of pilgrimage**. However, the **Indian Meteorological Department (IMD)** later said on 9 July 2022 that a cloudburst may not have actually occurred.

What is a cloudburst?

- A **cloudburst refers to an extreme amount of rain** that happens in a short period, sometimes accompanied by hail and thunder, and this has a **precise definition**.
- The India Meteorological Department (IMD) defines it as **unexpected precipitation** exceeding 100mm (or 10 cm) per hour over a geographical region of approximately 20 to 30 square km. **significant amounts of rainfall** such as this can result in floods.
- Basically**, all instances of cloudbursts involve heavy rain in a short period, but all instances of **heavy rain in a short period** are not cloudbursts if they do not fit this criterion.
- It is difficult to predict **when exactly a cloudburst will occur**, and there is little definitive data on the exact number of cloudbursts that occur in India.
- Due to their definition dealing with a very small area, it is difficult to accurately predict and **identify cloudbursts immediately**. However, they are more likely to occur in mountainous zones mainly because of terrain and elevation.

6. This is because, **in hilly areas**, sometimes saturated clouds ready to condense into rain cannot produce rain, due to the upward movement of the very warm current of air.
7. Instead of **falling downwards**, raindrops are carried upwards by the **air current**. New drops are formed and existing raindrops increase in size.
8. A study published in 2020 examined the **meteorological factors** behind the cloudburst over the **Kedarnath region**, where a cloudburst aided the devastating 2013 floods.

IPBES REPORT ON ANIMAL AND PLANT SPECIES

Fifty thousand wild species of **plants, animals, fungi** and **algae** meet needs of billions of people globally with one in five people relying on **wild species** for income and food, and one in three (2.4 billion) depending on fuel wood for cooking, said a report by the **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)**, released on 9 July 2022.

What

1. Often described as '**IPCC for biodiversity**', the IPBES in this report offered insights, analysis and **tools for sustainable use of wild species**, reminding the global community how much human beings are interdependent with **all living beings** and why it's, therefore, important to conserve them by stopping **overexploitation and protecting** their habitats.
2. The **wild species** are being used through **fishing, gathering, logging** and **terrestrial animal harvesting globally** with more than 10,000 of them being harvested for human food.
3. The report on '**Sustainable Use of Wild Species**' flagged a worrying trend that shows the illegal trade in wild species, worth up to \$199 billion annually, accounts for the **world's third largest class of illegal trade. Timber and fish** make up the largest volumes and value of illegal trade in wild species.
4. The report comes against the backdrop of the **stark findings of the IPBES** in May, 2019 that shows around **1 million animal and plant species** are threatened with **extinction**, more than ever before in human history.
5. Today **one million species are at risk of extinction**. And the unsustainable, illegal and unregulated use of species is a large part of the problem... This **(illegal) trade** also robs countries, indigenous people and local communities of access to their own resources and safe livelihoods.
6. The report identifies **five broad categories of 'practices'** in the use of wild species: **fishing; gathering; logging; terrestrial animal harvesting** (including hunting); and non-extractive practices, such as observing.
7. For each practice, it examines specific 'uses' such as for food and feed; **materials**; medicine, energy; recreation; ceremony; learning and decoration — providing a detailed analysis of the trends in each, over the past 20 years.

WORLD'S FIRST CHEETAH TRANSLOCATION PROJECT

Madhya Pradesh's **Kuno National Park** have been asked to prepare for the **relocation of about 12-14 cheetahs** in what is going to be the **world's first intercontinental cheetah translocation project**. There are **three or four leopards** in the area that have to be brought out before the cheetahs can move in.

What

1. The plan to **reintroduce cheetahs** — a species that went extinct in the 1950s — to India has been decades in the making.

2. The Indian government had initially **approached Iran**, where the **Asiatic cheetah**, the same subspecies that went extinct in India, exists, and was even keen on **cloning the species**.
3. The **Kuno National Park** had once been the chosen site for **translocation of the endangered Asiatic lion** from Gir in Gujarat: In 2013 the Supreme Court had said relocation of the Asiatic lion was of “**utmost importance**” and ordered the Ministry of Environment and Forests to complete the process within six months of the judgment.
4. **In 2012**, the Supreme Court had stayed the government’s plans to import cheetahs — an order it **upheld in 2013**. At the time, the court had said that the government needed to produce a detailed study before the introduction of **African cheetahs** could be considered.
5. **In 2017**, the **National Tiger Conservation Authority (NCTA)** appealed to the Supreme Court to reconsider its decision. Three years later — in 2020 — the Supreme Court allowed cheetahs to be reintroduced on “**an experimental basis**” even though a court-appointed panel rejected the project.
6. In January this year, the central government released an ‘**Action Plan For Introduction of Cheetah in India**’ laying down its relocation plans.

UN POPULATION REPORT

According to the **2022 edition** of the **United Nations’ World Population Prospects (WPP)**, released on 11 July 2022, **India is projected to surpass China** as the world’s most populous country **in 2023**. It also projected the **world’s population to reach 8 billion** on 15 November 2022.

What are the main takeaways for the global population?

1. **The world’s population continues to grow**, but the pace of growth is slowing down: The global population is expected to grow to **around 8.5 billion in 2030, 9.7 billion in 2050** and **10.4 billion in 2100**.
2. **Rates of population growth vary significantly across countries and regions**: More than half of the projected increase in global population up to 2050 will be concentrated in just **eight countries**: the **Democratic Republic of the Congo, Egypt, Ethiopia, India, Nigeria, Pakistan, the Philippines** and the United Republic of Tanzania.
3. **The population of older persons is increasing** both in numbers and as a share of the total: The **share of the global population aged 65 years** or above is projected to rise from **10% in 2022 to 16% in 2050**.
4. **A sustained drop in fertility has led to an increased concentration of the population** at working ages (between 25 and 64 years), creating an opportunity for accelerated economic growth per capita: This shift in the **age distribution** provides a **time-bound opportunity** for accelerated economic growth known as the “**demographic dividend**”.

What are the World Population Prospects?

1. The **Population Division of the UN** has been publishing the WPP in a **biennial cycle since 1951**.
2. Each **revision of the WPP** provides a historical time series of population indicators starting in 1950.
3. It does so by taking into account newly released **national data** to revise estimates of past trends in **fertility, mortality** or **international migration**.

5. **International migration is having important impacts on population trends** for some countries: For **high-income countries** between 2000 and 2020, the contribution of **international migration to population growth** (net inflow of 80.5 million) exceeded the balance of births over deaths (66.2 million). million), Venezuela (Bolivarian Republic of) (-4.8 million) and Myanmar (-1.0 million), insecurity and conflict drove the outflow of migrants over this period.

INDIA DETECTS FIRST CASE OF MONKEYPOX

India has reported **first laboratory confirmed case of Monkeypox** in Kerala from **Kollam district** after which union health ministry has rushed a multi-disciplinary team of experts to collaborate with the state health authorities in instituting public health measures, the union health ministry informed on 14 July 2022.

What is Monkeypox

1. **Monkeypox is a zoonosis**, that is, a disease that is **transmitted from infected animals to humans**.
2. According to the WHO, cases occur close to **tropical rainforests** inhabited by animals that carry the virus.
3. **Monkeypox virus** infection has been detected in **squirrels**, Gambian poached rats, dormice, and some species of monkeys.
4. **Human-to-human transmission** is, however, limited — the longest documented chain of transmission is **six generations**, meaning the last person to be infected in this chain was six links away from the original sick person.
5. Transmission, when it occurs, can be through contact with **bodily fluids**, lesions on the skin or on internal mucosal surfaces, such as in the **mouth or throat, respiratory droplets** and **contaminated objects**.
6. The **major symptoms are fever** with an **unexplained acute rash** all over the body.
7. Other symptoms include **headache, swollen lymph nodes, muscle and body aches, back pain** and **profound weakness**.

FACT TO REMEMBER:

1. GOVT. EXTEND TERM OF OBC'S COMMISSION
2. THE NATIONAL EMBLEM UNVEILED
3. NIRF RANKINGS 2022
4. INDIA ELECTED TO UNESCO PANEL
5. FIRST I2U2 SUMMIT KICKS OFF
6. DPIIT'S START-UP RANKINGS
7. NEW 'EXOTIC' SUB-ATOMIC PARTICLES DISCOVERED
8. IS4OM INAUGURATED

9. FIRST LOOK OF THE UNIVERSE

10. UN POPULATION REPORT

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