

My Notes....

NATIONAL

NIRF RANKING 2021

IIT-Madras, IISc-Bangalore, and IIT-Bombay have emerged as the **country's top three higher education institutions** in the **sixth edition** of the **National Institutional Ranking Framework (NIRF)** announced by Education Minister Dharmendra Pradhan on 9 September 2021. Not much has changed in the university and engineering schools categories.

What

- No new institution** has displaced **IISc, Jawaharlal Nehru University (JNU), and Banaras Hindu University (BHU)** from the **top three spots** among universities.
- Similarly, **IIT Madras, IIT-Delhi, and IIT-Bombay** continue to rule the roost in the engineering table.
- The **IIMs dominated the management category** with **IIM-Ahmedabad ranking first**, followed by IIM-Bangalore, IIM-Calcutta, IIM-Kozhikode, and IIT-Delhi.
- There was a bit of a reshuffle in the college category. While **Miranda College** retained the top position, **Lady Shri Ram College was pegged the second-best**.
- AIIMS-Delhi** is the **country's top medical institute**, followed by PGIMER Chandigarh and Christian Medical College in Vellore.
- The **research category was introduced this year** and **IISc-Bangalore** has been **adjudged the best**, followed by IIT-Madras and IIT-Bombay.

Flashback

- National Institute Ranking Framework or NIRF** is the **first-ever effort** by the government to rank **higher education institutions (HEIs)** in the country.
- Participation in the NIRF was voluntary in the initial years; it was made **compulsory for all government-run educational institutions** in 2018.
- In order to be ranked, **all education institutions** are assessed on **five parameters: teaching, learning and resources, research and professional practices**, graduation outcomes, outreach and inclusivity, and perception.
- NIRF lists out best institutions across **11 categories** – overall national ranking, universities, engineering, college, medical, management, pharmacy, law, architecture, dental and research.

INDIA IN COMMITMENT TO DEVELOPMENT INDEX

India ranked last out of 40 countries in the **2021 edition** of the **Commitment to Development Index (CDI)**, which assesses a country's commitment to policies that affect the development of other poorer nations. It scored a 0 overall out of a possible 100.

What

- Published since 2003** by US-based think tank, **Center for Global Development**, the index ranks 40 of the **world's high- and middle-income countries** on eight policy areas — **development finance, investment, migration, trade, environment, health, security and technology**.
- It analyses the countries' "**dedication to policies that affect more than five billion people** living in poorer nations". **Sweden topped this index** with a perfect score of 100.

3. India performed the worst in the trade, development finance, health and migration areas ranking 40th, 39th, 39th and 37th, respectively, and **performed the best in the environment category**, ranking sixth.
4. India was added to the index for the **first time in 2020** and ranked 37 then, ahead of Israel, Saudi Arabia and the UAE.

What these indicators mean

1. The index is broadly divided into **three categories** of indicators, namely **development finance, exchange and global public goods**.
2. The CDI labels development finance (i.e. utilising the public sector to aid the private sector in investing in developing nations) as “**the first policy area**”, assessing the extent to which countries are promoting global development.
3. Meanwhile, exchange measures the way in which “**countries manage the international flows of capital, goods and services, ideas, and people**” and is further divided into the investment, migration and trade indicators.
4. Similarly, the global **public goods category** is divided into **environment, health, security and technology indicators**.

POWER MINISTRY REVISES SHAKTI

In order to make **more coal available to power plants** that do not have any **power purchase agreement (PPA)**, the union power ministry agreed to changes in the guidelines for **SHAKTI scheme**. **SHAKTI**, or **Scheme for Harnessing and Allocating Koyala Transparently in India**, was **launched in 2018** to provide coal to stressed power units which lack coal supply.

What

1. The power ministry in a meeting with **Association of Power Producers (APP)**, the representative body for private gencos, agreed to **three separate windows** for auction--3 months, 6 months and one year.
2. In order to make coal available for a longer period, MoP will examine whether the duration of auction **can be extended for more than one year**.
3. Issue of Bank Guarantee is also to be examined if duration has to be extended beyond one year, said a statement by the ministry.
4. In the earlier two rounds held over the last two years, around **9,389 megawatt (MW) of power capacity** bid for the coal under the **SHAKTI scheme**.
5. During the **last round in February**, private power players had alleged that **Coal India** was offering less than the required amount of coal.
6. APP also asked the ministry for amendments in the '**Mega Power Policy**' which the MoP said is being taken up through **inter-Ministerial consultation**.

Flashback

1. '**Mega power policy**' is for projects **over 1,000 Mw** and was to expire on 31 March 2017, but the CCEA extended it by **five years**, thereby doubling the period to 10 years for projects to receive the '**mega power certificate**'.
2. The incentives provided in the scheme are **lower customs duty** and excise duty exemption for equipment.

UNWTO'S 'BEST TOURISM VILLAGE'

Kongthong, a Meghalayan village in the East Khasi Hills district has been chosen as one of the **three** entries from India for the **United Nations World Tourism Organization (UNWTO)**'s '**Best Tourism Village**'. A picturesque, **serene village** located between Meghalaya's Sohra and Pynursla ridges, **Kongthong** attracts tourists not just because of its landscape; it is also home to an ancient tradition of tune-giving or **Jingrwai Iawbei**.

What

1. Villagers here are known not by their names but by a specific tune. **Kongthong** is also known as the '**whistling village of India**'.
2. There are **10 major clans** in the village and four of them, namely **Khongsit, Majaw, Lynrah** and **Pohnong**, claim to be the founders.
3. Apart from Kongthong, the two other villages that have made it to the list are **Pochampally of Telangana** and **Ladhpura Khas in Madhya Pradesh**.
4. **Bhoodan Pochampally** is a census town in **Yadadri Bhuvanagiri district of Telangana**. The place is known for its traditional weave, featuring geometric patterns in ikat style of dyeing, named after the destination.
5. On the other hand, **Ladhpura Khas village** is located in Orchha Tehsil of Tikamgarh district in Madhya Pradesh. It is about seven kilometres away from **Orchha**, another popular tourist destination.

INDIA'S SHERPA APPOINTED FOR G20

The government on 7 September 2021 appointed commerce and industry minister **Piyush Goyal** as **India's Sherpa for the G20**. Goyal who is the union minister of consumer affairs, food and public distribution and textiles, **replaced** former union minister **Suresh Prabhu** as the sherpa for the meet. According to the ministry of external affairs, **India will hold the G20 presidency from 1 December 2022**.

What

1. **G20 is a major international grouping** that brings together **19 of the world's major economies** and the **European Union**, with its members accounting for **more than 80 per cent of global GDP**, 75 per cent of global trade and 60 per cent of the global population.
2. Prime Minister has been leading **India's representation at G20 Summits since 2014**.
3. The **next G20 Summit** is scheduled for **30-31 October 2021** under the **Italian Presidency**.
4. **India** has been a **member of the G20** since **its inception in 1999**.
5. India will be holding the G20 Presidency from 1 December 2022 and will convene the **G20 Leaders' Summit in 2023 for the first time**.
6. India will be part of the **G20 Troika** (preceding, current, and incoming G20 Presidencies) from 1 December 2021 till 30 November 2024.
7. The **G20 member nations** are Argentina, Australia, Brazil, Canada, China, Germany, France, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom and the United States.

INDIA'S FIRST BUILDING MADE OF BIO-BRICKS

The **Indian Institute of Technology (IIT)** in Hyderabad on 2 September 2021 inaugurated **India's first building** made of **bio-bricks from agro-waste**. Calling it a perfect illustration of '**Wealth from Waste**', IIT-H Director BS Murthy said the institute will submit a proposal to the **Ministry of Agriculture** to promote its wider adoption by the rural community.

What

1. Researchers at the IIT demonstrated that **agricultural waste can be converted into sustainable materials** which, in turn, can be used to build eco-friendly, cost-effective structures. In April this year, the team secured a **patent for the bio-brick material** and its manufacturing technology.
2. It is part of the **Bold Unique Idea Lead Development (BUILD) project** to demonstrate the strength and versatility of the material.
3. This innovation is going to be a **game-changer for rural village farmers** as their agricultural waste will become an income generator for them.
4. **Burning of agro-waste after harvest** is a major cause of air pollution. The **bio-brick technology** was developed to counter such pollution caused by stubble burning.
5. Bio-bricks are economical and are found to be 1/8 and 1/10 of weight for similar volume compared to **burnt clay bricks** and **concrete blocks**, respectively.
6. According to the researchers, the material exhibits **excellent thermal insulation** and fire-retardant properties. When used in roofing and wall panelling, it can effectively **reduce heat gain by 5 – 6 degrees**.

FIRST EVER SPACE DEPT SIGNS PACT WITH STARTUP

With the objective to woo private players in space activities, the **department of space (DoS)** has signed its **first-ever agreement** with a Hyderabad-based space startup, **Skyroot Aerospace**, for providing it “access to Isro’s facilities and expertise towards the development and testing of subsystems and systems of **space launch vehicles**”.

What

1. **Skyroot Aerospace** has, therefore, become the **first Indian startup** to formally enter into an agreement with Isro for using its assets since the announcement of the new policy decision of the government in May last year when finance minister Nirmala Sitharaman **opened up the space sector** and **Isro facilities for private players**.
2. The MoU will enable **Skyroot to undertake multiple tests** and access facilities of various Isro centres and help it avail of technical expertise of the space agency for testing and qualifying their **space launch vehicle systems** and subsystems.
3. **Skyroot Aerospace** has been developing its **first launch vehicle Vikram-I**, which is on track for an expected launch next year.
4. In August 2020, the company came to the limelight when it test-fired the **Raman-I hypergolic-fuel upper stage** (named after C V Raman).
5. This **solid-fuel upper stage** is a component of **Vikram-I** and Skyroot Aerospace was the **first desi private entity** to test such a stage.
6. On December 22, 2020, Skyroot Aerospace tested the **solid-fuel rocket engine Kalam-5**, the first of five planned **carbon-composite Kalam rocket motors** that are expected to power its launch vehicles.
7. **Skyroot Aerospace** was formed in January 2017 by former Isro scientists Pawan Kumar Chandana, Naga Bharath Daka and Vasudevan Gnanagandhi.

INTERNATIONAL

SIMBEX-2021 CONCLUDE

India and Singapore on 4 September 2021 concluded **maritime bilateral exercise** and the complexity of the drills shows ample testimony to the interoperability achieved between the Navies of both countries. The **28th edition** of the **Singapore-India Maritime Bilateral Exercise (SIMBEX)** was conducted from September 2 to September 4, the Ministry of Defence said.

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What

1. The Indian Navy was represented by Guided Missile Destroyer **INS Ranvijay** with a shipborne helicopter, **ASW Corvette INS Kiltan** and Guided Missile Corvette **INS Kora** and one **P8I Long Range Maritime Patrol Aircraft**.
2. **Initiated in 1994, SIMBEX** is the **Indian Navy's longest uninterrupted bilateral maritime exercise** with any foreign navy.
3. This year's edition of SIMBEX is also a "**special occasion**" as it takes place during the ongoing celebrations of the **75th year of India's independence**.
4. The success of **SIMBEX-2021** is yet another demonstration of the mutual resolve on both sides to strengthen the bilateral partnership further in the years ahead.
5. This year's **SIMBEX** was planned without any physical interactions as an '**at-sea only**' exercise hosted by the RSN in the southern fringes of the **South China Sea**.

Flashback

1. **India-Singapore Defence relations** remain a very significant aspect of the overall bilateral relationship and cover a very wide spectrum of collaboration from conventional **military-to-military exchanges to HADR and cyber security**.
2. Both navies have a representation in each other's **Maritime Information Fusion Centres** and have also recently signed an agreement on mutual submarine rescue support and coordination.

FIRST EVER BITCOIN BECOMES LEGAL TENDER

El Salvador on 7 September 2021 **becomes the first country in the world** to accept **Bitcoin as legal tender**, despite widespread domestic skepticism and international warnings of risks for consumers. President **Nayib Bukele's government** claims the move will give many Salvadorans **access to bank services for the first time** and save some \$400 million in fees on remittances sent home from abroad every year.

What

1. **In June, El Salvador's parliament approved a law** to allow the crypto money to be accepted as tender for all goods and services in the small Central American nation, **along with the US dollar**.
2. The government is installing **more than 200 Bitcoin teller machines**, some guarded by soldiers to prevent possible arson by opponents.
3. Economists and international bodies such as the **World Bank, International Monetary Fund and Inter-American Development Bank** have expressed concerns about **El Salvador's bitcoin adoption**.
4. Bitcoin is criticised by regulators for its **potential for illegal use** -- notably in **laundering money** from criminal activities and financing terrorism.

What Is Bitcoin?

1. **Bitcoin is a digital currency** created in **January 2009**.
2. It follows the ideas set out in a whitepaper by the mysterious and pseudonymous **Satoshi Nakamoto**.
3. Unlike **fiat currency**, bitcoin is created, distributed, traded, and stored with the use of a decentralized ledger system, known as a **blockchain**.

IRAN PLEDGES COOPERATE WITH UN ATOMIC AGENCY

Iran reached an agreement 12 September 2021 with the **United Nations atomic agency** that will grant international inspectors access to some of the country's nuclear-

related sites, a step likely to avert a crisis in the negotiations on **restoring the 2015 nuclear deal**.

What

1. The agreement comes after **International Atomic Energy Agency** Director-General Rafael Grossi made a last-minute trip to Tehran this weekend in a bid to persuade **Iran to step up its cooperation with the agency** ahead of a meeting of the IAEA's top member states starting on 13 September 2021.
2. The **U.S., France, Britain and Germany** had been discussing a formal censure motion against Iran next week **if no agreement was reached**.
3. The joint statement said **Iran and the agency** also agreed to hold senior level discussions in coming weeks aimed at **boosting cooperation on other issues**, which will likely include the agency's probe of **unreported nuclear material found in Iran** that Iranian officials have repeatedly failed to explain.
4. Provided Iran follows through on the agreed terms, the **U.S., France, Britain and Germany** are now likely to shelve discussions of censuring Iran at an IAEA board meeting.

Flashback

1. The **2015 nuclear agreement** lifted most **international sanctions on Iran** in exchange for tight but temporary restrictions on **Tehran's nuclear activities**.
2. **In May 2018**, then-President Donald Trump **pulled out of the accord** and imposed sweeping sanctions on Iran.
3. Beginning in the summer of 2019, Iran started progressively breaching the key restrictions in the accord.

COUNTER-TERRORISM ACTION PLAN

The **BRICS** has adopted a **counter-terrorism action plan**, Prime Minister said on 9 September 2021 while chairing a virtual summit of the **five-nation grouping**. **The summit**, which was **hosted by India**, was attended by Russian President Vladimir Putin, Chinese President Xi Jinping, South African President Cyril Ramaphosa and Brazil's Jair Bolsonaro.

What

1. The **BRICS (Brazil-Russia-India-China-South Africa)** brings together five of the largest developing countries of the world, representing **41 per cent of the global population, 24 per cent of the global GDP and 16 per cent of the global trade**.
2. The BRICS has created **strong institutions** like the **New Development Bank**, the **Contingency Reserve Arrangement** and the **Energy Research Cooperation Platform**, PM noted.
3. The Prime Minister said the grouping has achieved several "firsts" and referred to the holding of the **first-ever BRICS digital summit** recently.
4. This is an innovative step to increase health access with the help of technology. In November, our **Water Resources Ministers** will be meeting for the first time under the BRICS format.
5. It is also the first time that BRICS has taken a collective position on '**Strengthening and Reforming Multilateral Systems**,' PM said.
6. There has also been a consensus with regards to starting a **virtual BRICS vaccination research and development centre**. BRICS Alliance on **green tourism** is also another new initiative.

CHINA'S NEW MARITIME LAW

From 1 September 2021, **China's new maritime rules** designed to control the **entry of foreign vessels** in what Beijing calls "**Chinese territorial waters**" take effect. The move is expected to have far-reaching consequences for passage of vessels, **both commercial and military**, in the disputed **South China Sea, East China Sea** and **Taiwan Strait**, and is likely to escalate the existing tension with the US and its neighbours in the region.

What is the new law?

1. **Foreign vessels**, both **military and commercial**, will be henceforth required to submit to Chinese supervision in "**Chinese territorial waters**," as per the new law.
2. The **South China Sea**, which lies between **China, Taiwan, the Philippines, Brunei, Malaysia, Indonesia and Vietnam**, is of great economic importance globally.
3. Nearly **one-third of the world's shipping** passes through its lanes, and the waters house numerous important fisheries.
4. It is also a **critical route for India**, both militarily and commercially. The **South China Sea** plays a vital role in facilitating **India's trade with Japan, South Korea and ASEAN countries**, and assists in the efficient procurement of energy supplies.
5. In fact, the Ministry of External Affairs estimates that **more than 55% of India's trade passes through the South China Sea and Malacca Straits**.
6. India is also involved in **oil and gas exploration in offshore blocks** in the margins of the Sea, which has led to standoffs with Chinese authorities.

International position

1. Currently, **international maritime activities** are governed by an international agreement called the **United Nations Convention on the Law of the Sea (UNCLOS)** of which **China, India and over a hundred other countries are signatories** (the US, significantly, is not).
2. Accordingly, states have the right to implement territorial rights **up to 12 nautical miles into the sea**.
3. The UNCLOS also states that all vessels have the right of "**innocent passage**" through this region – China's new law violates this.

CHINA DEVELOPS PROTOTYPE HELICOPTER FOR MARS

China has developed a **prototype miniature helicopter** for surveillance work on **future Mars missions**, according to its space science agency, following the historic landing of a **robotic rover** on the Red Planet a few months ago. The **prototype is similar in appearance** to the **robotic helicopter Ingenuity**, developed by NASA for its **Perseverance mission** this year, China's National Space Science Center said on 1 September 2021.

What

1. The agency said the **helicopter could be a tool** for China's follow-up exploration on Mars.
2. **China** landed a **Mars rover in May** in its **first-ever mission** to the planet, becoming the **second country after the United States to do so**. NASA's most advanced rover, **Perseverance**, landed on the planet in February.
3. From the NASA rover, **Ingenuity** made its inaugural flight in April, rising about 3 metres (10 feet) above the surface, in **humankind's first successful deployment** of a powered aircraft in a world other than Earth.
4. The challenge for the **1.8 kg (4 pound) Ingenuity** is the planet's thin atmosphere, which is **just 1% as dense as Earth's**.

5. To compensate for the lack of **aerodynamic lift**, NASA engineers equipped Ingenuity with rotor blades that are larger - 1.2 metres (4 feet) tip to tip - and spin more rapidly than would be needed on Earth for an aircraft of its size.
6. Ingenuity has made **more than 10 outings since April**, covering an overall distance of more than 2 km (1.2 miles) with flight time of about 20 minutes in all.
7. China is planning its **first crewed mission to Mars in 2033**.

ECONOMY

IMF HIKES SDR ALLOCATION TO INDIA

The **International Monetary Fund (IMF)** has sharply increased its allocation of **Special Drawing Rights (SDR)** to India, in line with the country's existing quota in the fund. **SDR is an alternate reserve currency** floated by the IMF, which the member countries can freely exchange between themselves instead of relying on currency of any one particular country.

What

1. **SDR** is a basket of **U.S. dollar, Japanese yen, euro, pound sterling** and Chinese **Renminbi**.
2. A statement by the Reserve Bank of India said on 1 September 2021 that the IMF has increased **India's SDR quota to 12.57 billion**, which is equivalent to \$17.86 billion at the latest exchange rate, on 23 August.
3. The **total SDR holdings of India** now stands at **SDR 13.66 billion** (equivalent to around USD 19.41 billion at the latest exchange rate) as on August 23, 2021.
4. IMF makes the **general SDR allocation** to its members in proportion to their existing quotas in the Fund.
5. On 2 August, the board of IMF had approved a general allocation of about **SDR 456 billion**, of which **India's share came at SDR 12.57 billion**.
6. India holds **2.75 per cent of SDR quota** and **2.63 per cent of votes in the IMF**.
7. The country has been lobbying to increase the voting share in the IMF for quite some time. The **decision on this is due in 2023**.

NDB ADMITS NEW MEMBERS

The **New Development Bank (NDB)** set up by the **BRICS group of nations** said on 2 September 2021 it had admitted the **United Arab Emirates, Uruguay and Bangladesh** as members in its **first expansion push**.

What

1. **Brazil, Russia, India, China and South Africa** - a group of major emerging economies **known as BRICS** - launched the **bank in 2015**.
2. NDB has an authorised capital of **\$100 billion**, which is open for subscription by **members of the United Nations**.
3. Since launch, the **Shanghai-headquartered lender** has signed off some **80 projects worth \$30 billion** in all of its five member countries stretching across sectors from **transport, water and sanitation to clean energy** or digital and social infrastructure.
4. **NDB has initiated its membership expansion** and started formal negotiations with prospective members in **late 2020**, the bank said.
5. New members will have in NDB a platform to **foster their cooperation in infrastructure** and sustainable development, said NDB President Marcos Troyjo.

100% FDI ALLOWED IN TELECOM SECTOR

The Union Cabinet on 15 September 201 approved a **relief package for the telecom sector** that includes a **four-year moratorium on payment of statutory dues** by telecom companies as well as allowing **100 per cent foreign investment** through the **automatic route**.

What

1. The **definition of AGR**, which had been a **major reason for the stress in the sector**, has been rationalised by **excluding non-telecom revenue** of telecom companies.
2. **AGR refers** to revenues that are **considered for payment of statutory dues**.
3. All **non-telecom revenue** will be taken out of AGR. There was a regime of heavy interest, penalty & interest on penalty on payment of license fees, spectrum user charges and all kinds of charges.
4. A reasonable interest rate of **MCLR + 2% interest rate** has been offered and the penalty has been completely scrapped.
5. This will pave way for large-scale investments in the telecom sector.
6. These measures are expected to ease the cash flow issues being faced by some players in the industry.

GOVERNMENT WIDENS SCOPE OF TMA SCHEME

The government on 10 September 2021 **widened the scope of the Transport and Marketing Assistance (TMA) scheme** for specified **agriculture products** by including **dairy products** in its purview and increasing the rates of assistance. Enhanced assistance under the revised scheme is expected to help Indian exporters of agricultural products to meet rising freight and logistics costs, the commerce and industry ministry said.

What

1. **Under the TMA**, the government reimburses a **certain portion of freight charges** and provides assistance for the **marketing of agricultural produce**.
2. It was **launched in 2019** to boost exports of such commodities to certain countries in Europe and North America.
3. Now the **Department of Commerce** has notified revised TMA for specified agriculture products scheme for exports effected on or after 1 April 2021 up to 31 March 2022.
4. **Dairy products**, which were not covered under the earlier scheme, will now be eligible for assistance; it said adding that rates of assistance have been increased, **by 50% for exports by sea and 100% through the air**.
5. The scheme was introduced **to provide assistance for the international component of freight**, to mitigate disadvantage of higher freight costs faced by the Indian exporters of agriculture products.
6. It was initially **applicable for exports** effected during 1 March 2019 to 31 March 2020 and was later extended up to **March 31, 2021**.
7. The **Directorate General of Foreign Trade (DGFT)** will shortly notify the procedure for availing assistance under the revised scheme.

IMPORTS OF GM SOYMEAL VIA THREE MORE PORTS

India on 3 September 2021 allowed **imports of genetically modified (GM) soymeal** through **three more ports**, according to a government order, facilitating overseas purchases of the **animal feed in large volumes**.

What

1. **New Delhi** last month **allowed imports of GM soymeal** for the **first time** to help the poultry industry, which is reeling from a **surge in local soymeal prices** that tripled in a year to a record high.
2. But the government **permitted overseas purchases of the animal feed only** through the **Nhava Sheva Port**, primarily for containers.
3. This government order said that besides the **Nhava Sheva Port**, traders could now import soymeal via the **Mumbai Sea Port**, the **Tuticorin Sea Port** and the **Visakhapatnam Sea Port**.
4. India has contracted to import **250,000 tonnes of soymeal**, including 15,000 tonnes that Indian dealers had shipped out **only two months ago**.

Flashback

1. There are **three types of GM foods**, one with **Genetically Modified Organism (GMO)**, second with **Living Modified Organism (LMO)** and third with **Non-Living Modified Organism (NLMO)**.
2. The soyameal is NLMO. The Environment Ministry has said it has **no impact on human and animal health** as well as on the environment.

SCIENCE AND TECHNOLOGY

HANSA-NG MAKES FIRST FLIGHT

The **National Aerospace Laboratories (NAL)** said that the **new generation HANSA (Hansa-NG)**, a two-seater aircraft designed and developed by it, successfully made its **maiden flight** of 20 minutes on 3 September 2021.

What

1. The unique features of **HANSA-NG** are the **glass cockpit** with cabin comfort, **high efficient digitally-controlled engine**, electrically operated flaps, long endurance, low acquisition and operating cost.
2. **NAL** has already received **72 letters of intent (LoIs)** from various flying clubs and the aircraft, will be certified in the next four months after which the process of induction would begin.
3. **HANSA-NG** is an **upgraded version of HANSA**, which saw the **first flight in 1993**, and was certified in 2000.
4. Between 2000 and 2007, NAL developed **12 HANSA aircraft** which were delivered to flying clubs across India through the DGCA (director general of civil aviation).
5. It has since logged more than 4,000 flying hours with IIT-Kanpur still flying the aircraft.
6. The **Centre approved HANSA-NG in 2018** and **NAL retro-modified HANSA-3 aircraft** with a glass cockpit and got it certified by DGCA.
7. **NAL** is a constituent of the **Council of Scientific and Industrial Research (CSIR)** and **India's only government-owned aerospace research** and development laboratory in the civilian sector.

INSPIRATION4 LAUNCHED

SpaceX's first private flight blasted off on 15 September 2021 night with two contest winners, a health care worker and their rich sponsor, the most ambitious leap yet in **space tourism**. It was the first time a rocket **streaked toward orbit** with an all-amateur crew — **no professional astronauts**.

What

1. The **Dragon capsule's two men and two women** are looking to spend **three days circling the world** from an unusually high orbit — 100 miles (160 kilometers) **higher than the International Space Station** — before splashing down off the Florida coast this weekend.
2. It's SpaceX founder **Elon Musk's first entry in the competition** for **space tourism** dollars.
3. **Isaacman is the third billionaire** to launch this summer, following the brief space-skimming flights by **Virgin Galactic's Richard Branson** and **Blue Origin's Jeff Bezos in July**.
4. Joining Isaacman on the trip dubbed **Inspiration4** is **Hayley Arceneaux, 29**, a childhood cancer survivor who works as a physician assistant where she was treated — St. Jude Children's Research Hospital in Memphis, Tennessee.
5. **Arceneaux is set to become the youngest American** in space and the first person in space with **prosthesis**, a titanium rod in her left leg.
6. The recycled Falcon rocket soared from the same Kennedy Space Center pad used by the company's three previous astronaut flights for NASA. But this time, the **Dragon capsule aimed for an altitude of 357 miles** (575 kilometers), just **beyond the Hubble Space Telescope**.

CLOUD GAMING SESSION ON 5G NETWORK

Telecom operator **Bharti Airtel** on 2 September 2021 said it has successfully conducted **India's first cloud-gaming session** in a **5G environment**. The demonstration was conducted in **Manesar**, Gurgaon, as part of the **ongoing 5G trials**, using spectrum allotted by the Department of Telecom, the company said.

What

1. **Cloud gaming** will be **one of the biggest use cases of 5G**, given the combination of **high speed** and **low latency**.
2. **Cloud gaming enables users to stream** and play games in real-time without having to download these or invest in gaming hardware.
3. With the **advent of 5G networks**, cloud gaming is expected to become the "**new normal**" as users would be able to experience high-end console-like gaming on smartphones and tablets while on the move.
4. **India**, with its **vast youth population**, growing smartphone penetration and 5G networks, will see mobile gaming evolve into a USD 2.4 billion market opportunity.
5. As per some estimates, **India's base of 436 million online gamers** is expected to reach 510 million by 2022.

Flashback

1. Earlier this year, Airtel successfully demonstrated **5G services over a live 4G network** in Hyderabad.
2. The company is currently **conducting 5G trials in multiple cities** across India and validating technologies and use cases through the trial spectrum allotted by the telecom department. Airtel has teamed up with **Ericsson and Nokia** for the trials.

CRISPR TO CONTROL GROWTH OF MOSQUITOES

Leveraging advancements in **CRISPR-based genetic engineering**, researchers have created a system that **restrains populations of mosquitoes** that infect millions each year with debilitating diseases. The "**precision-guided sterile insect technique**" (**pgSIT**), alters genes linked to male fertility—**creating sterile offspring**—and female flight in **Aedes aegypti**, the mosquito species responsible for spreading diseases including dengue fever, chikungunya and Zika, the University of California, San Diego said.

What

1. The **pgSIT** uses **CRISPR** to **sterilise male mosquitoes** and render female mosquitoes (which spread disease) flightless.
2. The system is **self-limiting** and is not predicted to persist or spread in the environment, two safety features that should enable acceptance for this technology.
3. The scientists say **pgSIT eggs can be shipped** to a location threatened by **mosquito-borne disease** or developed at an on-site facility that could produce the eggs for nearby deployment.
4. Once the **pgSIT eggs are released in the wild**, sterile pgSIT males will emerge and eventually mate with females, driving down the wild population as needed.

Flashback

1. **CRISPR (clusters of regularly interspaced short palindromic repeats) technology** is a simple yet powerful tool for editing genomes.
2. It allows researchers to **easily alter DNA sequences** and **modify gene function**.
3. Its many potential applications include **correcting genetic defects**, treating and preventing the spread of diseases and improving crops.

DEVICE FOR BIO EXPERIMENTS IN SPACE

A team of researchers from **Indian Space Research Organisation (Isro)** and **Indian Institute of Science (IISc)** have developed a **modular, self-contained device to cultivate microorganisms**, which could enable scientists to carry out **biological experiments in outer space**.

What

1. The team has shown how the device can be used to activate and track the growth of a bacterium called **Sporosarcina pasteurii** over several days with **minimal human involvement**.
2. Understanding **how such microbes behave in extreme environments** could provide valuable insights for human space missions such as 'Gaganyaan', **India's first crewed spacecraft** set to be launched in 2022.
3. Scientists have been increasingly exploring the use of **lab-on-chip platforms** — which combine many analyses into a **single integrated chip** — for such experiments, IISc, said that there are additional challenges to designing such platforms for **outer space**, when compared to the lab.
4. The new device uses an **LED and a photodiode sensor** combination to track **bacterial growth** by measuring the **optical density or scattering of light**, similar to spectrophotometers used in the lab.
5. It also has separate compartments for different experiments. And IISc said that each compartment or '**cassette**' consists of a chamber where bacteria — suspended as spores in a **sucrose solution** — and a nutrient medium can be mixed to kick-start growth, by flicking on a switch remotely.
6. The device can also be adapted for studying **other organisms** such as **worms**, and for **non-biological experiments**.
7. Now that ISRO is embarking on an **ambitious human space mission**, it has to come up with its own solutions, made at home.

CHANDRAYAAN-2 COMPLETES OVER 9,000 ORBITS

The **lander and rover** might have **crash-landed on the lunar surface**, but the **Chandrayaan-2 mission** itself has just completed **9,000 revolutions** around the Moon. The onboard instruments are also functioning nominally, as **Indian Space Research Organisation (Isro)** Chairman K Sivan said on 6 September 2021.

What

1. At the launch of a two-day **Lunar Science Workshop-2021**, Sivan said **eight payloads onboard** the mission's spacecraft are in functional mode, relaying remote and **in-situ observations of the lunar surface** from an **altitude of 100 km**.
2. The workshop is to commemorate the **spacecraft's two years** around the Moon.
3. The space agency is preparing for **Chandrayaan-3** to make another go at **lunar landing**.
4. The **orbiter from the second mission** has generated data that Sivan said was '**very much encouraging**.'
5. The **Chandrayaan-2 mission** featured an **Orbiter, Lander and Rover** designed to explore the **lunar South pole**.
6. **Launched onboard GSLV Mk-III** on 22 July 2019, the mission reached the lunar orbit on 20 August 2021.
7. The mission went as planned till 6 September 2021, when the **lander and rover** crash-landed after separating from the orbiter.

PERSEVERANCE GOT ITS FIRST PIECE OF ROCK

NASA has confirmed that its **Perseverance rover** has succeeded in collecting its **first rock sample on Mars**. The target was a briefcase-sized rock nicknamed "**Rochette**" from a ridgeline that is half a mile (900 meters) long. **Perseverance uses a drill** and a hollow coring bit at the end of its **7-foot-long (2-meter-long) robotic arm** to extract samples.

What

1. After coring the rock, the **rover vibrated the drill bit** and tube for one second, five separate times.
2. This procedure is called "**percuss to ingest**" and is meant to clear the lip of the tube of **residual material**, and cause the sample to slide down the tube.
3. **Perseverance** landed on an ancient lake bed called the **Jezero Crater** in February, on a mission to search for **signs of ancient microbial life** using a suite of sophisticated instruments mounted on its turret.
4. It is also trying to better characterize the **Red Planet's geology** and past climate.
5. Eventually **NASA wants to collect samples** taken by the rover in a joint mission with the European Space Agency, sometime in the 2030s.
6. Its first attempt at taking a sample in August failed after the rock was too crumbly to withstand the robot's drill.

HUGHES, ONEWEB INK PACT

Hughes Network Systems and **OneWeb** have announced agreements for **Low Earth Orbit satellite service** in the US and India. **Hughes Network Systems**, which focuses on **satellite and multi-transport technologies** and networks, and **OneWeb**, the **Low Earth Orbit (LEO) satellite communications company** backed by Bharti, said that they have signed a distribution agreement in the US, for enterprise services.

What

1. **In India**, the parties have **entered into an MOU** (Memorandum of Understanding) for a strategic agreement to distribute services to large enterprises, small and medium

- businesses, government, **telcos** and **ISPs (Internet Service Providers)** in the rural and remote parts of the country, OneWeb said.
- Services will be offered by **Hughes Network Systems, LLC**, and **Hughes Communications India**, respectively.
 - Hughes and OneWeb** would work together to broaden distribution globally, with Hughes offering **OneWeb's low-latency, high-speed connectivity for markets** such as enterprise, government, commercial aviation and maritime, cellular backhaul, and **community Wi-Fi hotspots**.
 - Its (Hughes) parent company **EchoStar** is an investor in **OneWeb**, a company that is building its initial constellation of **648 LEO satellites**.
 - The services will begin this year to the **Arctic region** including **Alaska, Canada**, and the **UK**.
 - OneWeb** had recently said it is on track to offer services in India from **May 2022**, and that its offering will benefit **not just Airtel but the other telecom operators as well**, by pushing broadband into underserved and remote areas of the country.
 - By late 2022, **OneWeb will be offering its high-speed, low latency connectivity services**, globally.

MISCELLANEOUS

WORLD UNIVERSITY RANKINGS 2022

THE INDIAN Institute of Technology in **Ropar** has secured **rank 2 in India** in the **World University Rankings 2022** released by **Times Higher Education**. In another significant feat, the institute has ranked **14th in citations (quality of research)** in the world.

What

- The institute has been **bracketed in the 351-400 categories** at the global level. It is **one among 71 institutes of India** which have been named in these rankings.
- Among other Indian institutes that made it to the list, **IISc Bangalore** maintained its **global position in 301-350 bands** for the third consecutive year and **secured rank 1 in India**.
- A total of **71 Indian universities** made it to the World University Rankings 2022, compared to 63 last year.
- IIT Ropar** is ahead of all IITs in research quality, scoring **highest in citations**.
- The institute has been working on several projects including **innovations to combat Covid-19 crisis, stubble management solution**- converting stubble into the acoustic board, **stubble removal machine**, device to monitor vehicle pollution in real-time, coating resistant to erosion and corrosion, **detecting group level emotions**, intoxicated state detection, **detecting type 2 diabetes** from fingernails, **lotus-inspired biodegradable water repellent material** developed, thermal imaging techniques for cancer detection as well as vaccination against drug addiction, among others.

Flashback

- The ranking is based on **13 performance indicators** that measure an institution's performance across **four areas: teaching, research, knowledge transfer and international outlook**.
- The **Times Higher Education World University Rankings 2022** include more than **1,600 universities across 99 countries** and territories.

5-PRONG STRATEGY FOR NIPAH VIRUS

The Union health ministry on 6 September 2021 recommended a **five-pronged strategy** to the Kerala government **to tackle Nipah**, based on the first report submitted by the central expert team to visit the state amid the outbreak.

What is the strategy?

1. District authorities must identify **primary and secondary contacts**. All high-risk contacts may be moved to identified facility quarantine and observed for symptoms.
2. A **referral system be established** along with earmarked ambulances and trained staff.
3. **Adequate stock of Ribaverin (anti-viral)** and personal protective equipment need to be maintained at the district level.
4. The Centre also recommended that the **state set up a control room** for daily reporting of cases.
5. Coordination with animal health and wildlife department and other field officers may be initiated to **trap and collect samples from fruit bats** for virological studies and other associated measures.

Flashback

1. **Nipah virus** infection is a **zoonotic illness** that causes severe disease in **both animals and humans**.
2. It was **first identified in 1998** during an **outbreak in Malaysia**. The death rate for Nipha virus is **70 per cent**.
3. It is not likely to **spread like Covid-19** as it is not an **airborne infection**. The virus can be **transmitted from animals (bats or pigs), or contaminated foods**, and from close contact with infected person's body fluids.
4. Fever, respiratory symptoms including cough, sore throat, aches, fatigue and encephalitis are the symptoms of this virus.

RESTRICTIONS ON MERCURY IMPORTS

The government on 9 September 2021 **imposed restrictions on the imports of Mercury**, used in different sectors including **older thermometers, fluorescent light bulbs and electrical switches**.

What

1. **Import policy of mercury** has been revised from free to restricted, subject to obtaining prior informed **consent from the Ministry of Environment, Forest and Climate Change**, the Directorate General of Foreign Trade (DGFT) said in a notification.
2. Earlier, **there were no restrictions on the imports**, but now an importer **would have seek permission** from the government.
3. Import of mercury stood at USD 6.15 million in 2020-21. It was USD 3.49 million during April-June this fiscal.

DEVAS-ANTRIX AGREEMENT AS FRAUD

The **National Company Law Appellate Tribunal (NCLAT)** has upheld an order of the Bengaluru bench of the National Company Law Tribunal (NCLT) to wind up **Devas Multimedia Private**. The appellate tribunal has also said that it was apparent that a fraud had occurred. One of the major findings of NCLAT in its order is that every benefit or advantage accrued to Devas under the **2005 agreement** was “through fraud, misrepresentation or suppression”.

Devas Multimedia and Antrix Corporation Deal

1. In 2005, Antrix Corporation had signed an agreement to lease **two communication satellites to Devas for 12 years** for Rs 167 crore.
2. Devas, which then was a **startup** incorporated just for the purpose, was to provide **audio-video services to mobile platforms** in India using the space or S-band on **ISRO's GSAT 6 and 6A satellites**.
3. The **Devas Multimedia-Antrix Corp agreement** was cancelled by the then UPA government in 2011 after allegations of the deal being a quid pro quo "sweetheart deal" were raised.
4. In 2014, the Central Bureau of Investigation (CBI) and Enforcement Directorate (ED) were asked to probe the deal.

3RD SET OF SWISS BANK DETAILS

India will get this month the **third set of Swiss bank account details** of its nationals under an **automatic exchange of information pact** with Switzerland and this will include for the **first time the data about real estate properties** owned by Indians there, officials said on 12 September 2021.

What

1. The move assumes significance on the part of Switzerland as well as the **European Alpine nation** is trying hard to reposition itself as a **key global financial centre** while warding off the long-persisting perception about the Swiss banking system being an alleged **safe haven for black money**.
2. It would be the **third time** that India will get details about bank accounts and other financial assets **held by Indians in Switzerland**.
3. It will be the **first time** that the information being shared with India would include information about the **real estate assets**.
4. India had received the **first set of details** from Switzerland under **AEOI (Automatic Exchange of Information)** in **September 2019**. It was among **75 countries to get such information** that year.
5. In **September 2020**, India received the **second set of Swiss bank account details** of its nationals and entities, along with **85 other recipient countries** with whom **Switzerland's Federal Tax Administration (FTA)** exchanged information on financial accounts within the framework of global standards on AEOI last year.
6. From this year, **Switzerland's Federal Council**, the country's top governing body, has decided to implement a key recommendation of the **Global Forum on Transparency and Exchange of Information** for Tax Purposes, under which Swiss authorities will also share details about investments made by foreigners in the Swiss real estate sector.

Flashback

1. The **86 countries covered under the AEOI** in 2020 included **11 new jurisdictions** -- Anguilla, Aruba, Bahamas, Bahrain, Grenada, Israel, Kuwait, Marshall Islands, Nauru, Panama and the United Arab Emirates -- in addition to a list of 75 countries, with whom information was shared in 2019.
2. **Switzerland's first such exchange** took place at the end of September 2018 and involved 36 countries, but **India did not figure in the list at that time**.
3. The **Global Forum** of the Organisation for **Economic Cooperation and Development (OECD)** reviews **AEOI** implementation.

HINDI DIWAS 2021

India celebrates **Hindi Diwas**, also known as **Hindi Day**, on 14 September every year to commemorate the adoption of Hindi in the **Devanagari script** as one of the **official languages of the nation**. One of the reasons behind celebrating this day is to prevent the **increasing trend of the English language** in the nation and the neglect of Hindi.

What

1. The **Constituent Assembly of India** accepted **Hindi**, written in **Devanagari script**, as the official language of India on 14 September 1949.
2. Officially, the **first Hindi Day** was celebrated on **14 September 1953**.
3. The reason behind adopting Hindi as one of the official languages was to **simplify administration in a nation** with multiple languages.
4. Today, in India alone, there are roughly **about 43.6 per cent speakers**, who identify Hindi as their mother tongue — according to the 2011 census.
5. The language has other variants as well, like **Awadhi, Braj and Khadi Boli**.
6. **Rajbhasha Kirti Puraskar** and **Rajbhasha Gaurav Puraskar awards** are also given to ministries, departments, public sector units (PSUs), nationalised banks and citizens on Hindi Diwas for their contribution and promotion of Hindi.

PLI SCHEME FOR MAKING DRONES

The government on 15 September 2021 approved a **production-linked incentive (PLI)** scheme for **drones and drone components**. Together with the liberalised drone rule enacted last month, the aviation ministry expects drone manufacturing to attract investment in the next three years, generating direct jobs over the next three years.

What

1. The **PLI rate at a constant 20%** for all three years is an exceptional treatment given only to the **drone industry**. In PLI schemes for other sectors, the PLI rate reduces every year.
2. The government has kept the **eligibility norm for MSME and startups** in terms of annual sales turnover at **Rs 2 crore (for drones)** and **Rs 50 lakhs (for drone components)**.
3. The eligibility norm for **non-MSME companies** in terms of annual sales turnover has been kept at **Rs 4 crore (for drones)** and **Rs 1 crore (for drone components)**.
4. The proposed tenure of the PLI scheme is three years starting in FY 2021-22. The PLI scheme will be extended or redrafted after studying its impact in consultation with the industry.
5. The Government has agreed to **fix the minimum value addition norm** at 40% of net sales for drones and drone components instead of 50%, another exceptional treatment given to the drone industry.