

My Notes....

NATIONAL

INDIA IN CRI 2021

India was the seventh worst-hit country due to extreme weather events in 2019, shows a **global Climate Risk Index**, released on 25 January 2021, ranking countries according to their vulnerability both in terms of **fatalities and economic losses**. The **top six most vulnerable countries** in the **Climate Risk Index (CRI) 2021** ranking are **Mozambique, Zimbabwe, Bahamas, Japan, Malawi and Afghanistan**. India, however, **improved** its ranking from fifth in CRI 2020 to **seventh in CRI 2021**.

What

1. **India topped the dubious list** in terms of **having highest number of fatalities (2,267)** and the **biggest economic loss** (68,812 million USD) in 2019.
2. Its **overall CRI ranking figured at number seven** due to low fatalities per one lakh of inhabitants and losses per unit of GDP due to climate change-induced extreme weather events such as **storms, floods, heat waves and cyclones**.
3. The report shows that over **4,75,000 people had lost their lives** as a direct result of more than 11,000 extreme weather events globally and lost around 2.56 trillion USD (in purchasing power parities) in the past 20 years between 2000 and 2019.
4. **Puerto Rico, Myanmar and Haiti were the top three most affected countries** during the 20-year period with **India figuring at number 20 in the long-term CRI**.
5. **Eight of the ten countries most affected** between 2000 and 2019 **are developing countries** with low or lower middle income per capita.

Flashback

1. The **global CRI**, developed by **Germanwatch**, analyses quantified impacts of extreme weather events – both in terms of the fatalities as well as the economic losses that occurred.
2. The **index is based on data from the Munich Re NatCatSERVICE11**, which is considered worldwide as **one of the most reliable and complete databases** on this matter. Besides, it uses the **socio-economic data** from the **International Monetary Fund (IMF)**.

INDIA IN CPI 2020

India's rank has slipped six places to **86th among 180 countries** in a **corruption perception index (CPI)** in 2020. For 2020, **Transparency International (TI)'s corruption perception index** was released on 28 January 2021. The index **ranks 180 countries and territories** by their **perceived levels of public sector corruption** according to experts and business people.

What

1. The Index uses a **scale of 0 to 100**, where **0 is highly corrupt** and **100 is very clean. India's rank is 86** out of 180 nations with a **score of 40**.
2. **India was ranked at 80th position** out of 180 countries **in 2019**.
3. The **CPI score for India is constant this year** as well as the previous year's score, the index said.
4. **India is still very low on corruption Index**, noting that experts feel the **CPI does not reflect the actual corruption level in any country**.
5. The integrity score determines the corruption situation of a country.
6. This year, **New Zealand and Denmark were ranked at first position** with scores of 88.
7. **Somalia and South Sudan were ranked lowest** at 179th position with scores of 12.

'RAKSHITA' LAUNCHED

The **Central Reserve Police Force (CRPF)** and **Defence Research and Development Organisation (DRDO)** on 18 January 2021 launched a **pecially developed 'RAKSHITA'** - a **bike ambulance** to attend urgent evacuation needs of the security force personnel in event of a medical emergency or battle injury in **Naxal affected areas**.

What

1. These bikes will give **assistance to CRPF jawans** and paramedics in case of any injuries during encounters.
2. These bikes will be more useful in areas like **Bijapur, Sukma, Dantewada** etc., as it is tough for the force to take big vehicles or ambulances inside the jungle.
3. The bike has been developed after the CRPF noticed a need for such bikes to reach fast to the narrow roads in tensed areas, especially in the **Naxalite zones**.
4. There have been instances where medical facilities couldn't reach on time and a delay in medical assistance ended up making the **patients' situation more critical**.
5. The **Institute of Nuclear Medicine & Allied Sciences (INMAS)** works in the area of biomedical and clinical research with reference to **radiation, neurocognitive imaging and research**.
6. It functions under the DRDO and is the **Research and Development (R&D) wing of Ministry of Defence** Government of India.

UNGA ADOPTS RESOLUTION FOR RELIGIOUS SITES

The **UN General Assembly has adopted a resolution** to **promote a culture of peace and tolerance to safeguard religious sites** all across the world. The resolution adopted on 21 January 2021 **calls for strengthened international efforts** to foster a global dialogue on the **promotion of a culture of tolerance and peace at all levels**, based on respect for human rights and for the diversity of religions and beliefs.

What

1. It **condemns all acts or threats of violence**, destruction, damage or endangerment, directed against religious sites and **denounces any moves to obliterate or forcibly convert any religious sites**.
2. It **invites all member states**, the **UN system**, **regional and nongovernmental organisations** and other relevant stakeholders **to support UN initiatives** that promote tolerance, including the **UN Plan of Action to Safeguard Religious Sites**.
3. The resolution expresses concern about the **increase in incidents of racial and religious intolerance**, discrimination and related violence, as well as of negative racial and religious stereotyping.
4. It **condemns any advocacy of national, racial or religious hatred** that constitutes incitement to discrimination, hostility or violence, and urges states to take effective measures to address and combat such incidents.
5. It expresses deep concern at the **continued serious instances of derogatory stereotyping, negative profiling and stigmatization of persons based on their religion or belief**, as well as programs and agendas pursued by extremist individuals, organisations and groups aimed at creating and perpetuating negative stereotypes about religious groups.
6. It reaffirms the **essential need to strengthen international, regional and sub-regional cooperation** aimed at enhancing the national capacity of member states to prevent and effectively suppress attacks on places of worship.
7. It **deplores damage to the cultural heritage of countries** in situations of crisis, conflict and post-conflict, and calls for an immediate end to such acts.

ASIA-PACIFIC PERSONALISED HEALTH INDEX

India ranked 10th out of 11 Asia Pacific countries in a **newly-launched health index** to measure the **progress towards personalised healthcare**. The **Economist Intelligence Unit (EIU) report 'Asia-Pacific Personalised Health Index'** measures the readiness of **11 health systems** across the region—Australia, China, Japan, India, Indonesia, Malaysia, Singapore, South Korea, Taiwan, Thailand and New Zealand—in adopting personalised healthcare, enabling the right care to be tailored to the right person at the right time.

What

1. The **'Personalised Health Index'** measures performance against **27 different indicators of personalised health** across **four categories** called **'Vital Signs'**.
2. These include **Policy Context, Health Information, Personalised Technologies and Health Services**.
3. In the **health information indicator**, **India ranked 10th** with a score of 41. It takes into account **data, infrastructure and technical expertise** driving personalised healthcare.
4. **In health services India ranked 11th** with a score of 24. The indicator takes into account **planning, organisation and delivery of services** with respect to personalised healthcare.

5. **Under Personalised Technologies indicator, India ranked 9th** with a score of 30. This indicator takes into account the **devices, applications, platforms and reimbursement structures** that will drive personalised healthcare based on the needs of stakeholders.
6. With a score of 48, **India ranked 5th in the Policy Context indicator** that takes into account the **politics, frameworks, partnerships, people and drivers** that will facilitate personalised healthcare.
7. The findings further indicated that **Singapore performed highest** overall of the geographies measured due to a combination of high levels of digital maturity, comprehensive national strategies, a **strong digital infrastructure and expansive innovation capacities** leading to top scores in both the Health Information and Personalised Technologies categories.
8. **Taiwan (2nd), Japan (3rd) and Australia (4th)** also performed well in overall readiness. Indonesia ranked 11th in the index.

MOU WITH IEA FOR ENERGY SECURITY

India on 27 January 2021 **inked a strategic partnership agreement** with the **International Energy Agency (IEA)** to strengthen cooperation in **global energy security, stability and sustainability**. This partnership will lead to **an extensive exchange of knowledge** and would be a stepping stone towards India becoming a full member of IEA.

What

1. The **Memorandum of Understanding (MoU)** was signed by **Power Secretary Sanjiv Nandan Sahai** and **IEA Executive Director Fatih Birol**.
2. The **contents of the strategic partnership** will be jointly decided by IEA members and India, including a phased increase in benefits and responsibilities for India as an IEA strategic partner.
3. The strategic partnership will build on existing areas of work within **Association and the Clean Energy Transitions Programme**, such as **Energy Security, Clean & Sustainable Energy...Expansion of gas-based economy** in India etc.
4. The **IEA Secretariat will be responsible for implementation of the cooperative activities in India** and for facilitating discussion between the IEA members and India to further develop the strategic partnership.
5. Through this agreement, the **Indian government endeavours to take necessary steps** to encourage and promote strategic and technical cooperation in the energy sector in the identified areas.

Flashback

1. The **IEA was born with the 1973-1974 oil crises**, when industrialised countries found they were **not adequately equipped to deal with the oil embargo** imposed by major producers that pushed prices to historically high levels.
2. The **IEA was established as the main international forum for energy co-operation** on a variety of issues such as **security of supply, long-term policy, information transparency, energy efficiency, sustainability, research and development, technology collaboration and international energy relations**.

INTERNATIONAL

US RETURN TO PARIS CLIMATE ACCORD

U.S. President Joe Biden on 20 January 2021 announced **America's return to the international Paris Agreement** to fight climate change, the centerpiece of a raft of day-one executive orders aimed at **restoring U.S. leadership in combating global warming**. The announcements also included a sweeping order to review all of former President Donald Trump's actions weakening climate change protections, the **revocation of a vital permit for TC Energy's Keystone XL oil pipeline project** from Canada, and a **moratorium on oil and gas leasing activities** in the **Arctic National Wildlife Refuge** that Trump's administration had recently opened to development.

What

1. The orders will mark the **start of a major policy reversal** in the **world's second-largest greenhouse gas emitter** behind China.
2. Biden has promised to put the United States on a **track to net-zero emissions by 2050** to match the steep and swift global cuts that scientists say are needed to avoid the most devastating impacts of global warming, **using curbs on fossil fuels and massive investments in clean energy**.
3. **Trump withdrew the United States from the 2015 Paris deal** late last year, arguing it was too costly to the U.S. economy.
4. The **United States continues to be the one and only country** that has withdrawn from the Paris Agreement, making it, frankly, the **pariah of this multilateral agreement**.
5. The **United States under Obama** pledged to **deliver \$3 billion to the Green Climate Fund** to help vulnerable countries fight climate change. It has **delivered only \$1 billion so far**.

NUCLEAR TREATY WITH US EXTEND

Russian President **Vladimir Putin** on 30 January 2021 signed a bill into law **ratifying a five-year extension of the New Strategic Arms Reduction Treaty (New START)** with the US, one of the **last major arms reduction treaties signed** since the end of the Cold War. The validity period of the **New START will be extended by five years to 5 February 2026**.

What

1. The extension of the treaty meets Russia's national interests, makes it possible to preserve the transparency and predictability of **Moscow-Washington strategic relations**, helps to **maintain strategic stability in the world**, positively affects the international situation, and **contributes to the nuclear disarmament process**.
2. **In 2010, Russia and the US signed the New START**, which stipulates limits to the numbers of deployed nuclear warheads and strategic delivery systems by both.
3. The **last remaining nuclear arms control treaty in force** between the two nuclear superpowers was about to expire on 5 February before they agreed to preserve it.

UK TO JOIN CPTPP

The **UK government** has announced that **it is applying to join the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP)**, one of the **world's largest free-trade areas** made up of **11 developed and emerging economies in the Pacific**, under its post-Brexit plans.

What

1. **Joining the CPTPP** reflects the UK's post-Brexit Pacific tilt and is dubbed as a critical part of **wider trade strategy**, which aims to deepen links with faster-growing parts of the world and partnering with countries who believe in **free and fair trade, including India**.
2. The decision to join the CPTPP, comprising Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam, marks one year since the UK left the European Union (EU) on 31 January last year and **entered a Brexit transition period** which concluded at the start of this year.
3. The **UK has been a major beneficiary of the rise of digital trade** with over 67 per cent of service exports worth 190.3 billion pounds being digitally delivered.
4. The UK says its membership will complement the bilateral FTAs it has already concluded or is negotiating with **nine of the CPTPP members**, including **Japan and Canada**.

PAKISTAN GETS GI TAG FOR BASMATI RICE

Pakistan has received the Geographical Indicator (GI) tag for its Basmati, paving the way for creating a local registry for the particular strain of rice and making a case in the international market, as the **country fights a case in the EU against India's move** to get Basmati rice registered as its product.

What

1. A **GI tag is a sign used on products** that have a **specific geographical origin** and possess origin-based qualities and reputation in the region.
2. **Pakistan is fighting a case in the 27-member European Union against India's move** to get Basmati rice registered as its product.
3. Laws require that before applying for registration of any product in the international market it has to be protected under the **geographical indication (GI) laws** of that country.
4. Pakistan said on 26 January 2021 that the **country had received the Geographical Indicator (GI) tag for its Basmati**.
5. The issue of protecting Basmati rice as a product of Pakistan came to the forefront after **India submitted an application to the European Union claiming sole ownership** of the commodity in September last year.
6. In its application, India claimed that "**Basmati**" is **special long grain aromatic rice** grown and produced in a particular geographical region of the subcontinent.

7. After highlighting the brief history of Basmati rice, **India also claimed** that the **region is a part of northern India**, below the foothills of the Himalayas forming part of the **Indo-Gangetic plain**.
8. The Indian claim to the EU was challenged in December and the main argument by Pakistan was that Basmati rice was a joint product of India and Pakistan.

ECONOMY

POLICY ON PSU PRIVATISATION

The **Cabinet Committee of Economic Affairs** has cleared the **public sector enterprises (PSE) policy**, said sources aware of the development, on 27 January 2021. The government had **first mooted an overhauled PSE policy** in the **Aatmanirbhar Bharat Abhiyan** mid last year, which aims to keep **not more than four central public sector enterprises in strategic sectors** and open up **all other sectors for privatisation**.

What

1. After several consultations with ministries, **about 18 strategic sectors** have been **identified for disinvestment purposes** including **coal, crude oil, power, steel, telecom, atomic energy and defence**.
2. Under the **manufacturing sector**, steel, fertiliser, atomic energy, petroleum refining and marketing, defence, ship building and power generation have been identified as **critical sectors requiring large presence of PSUs**.
3. In the rest of the sectors, the government will eventually move out clearing roads for private participation.
4. The government had **earlier proposed disinvestment in all other commercial entities** except development and regulatory bodies, trusts, not for profit companies, refinancing institutions and companies formed under acts of Parliament.
5. Similarly, **railways, ports** that undertake commercial operations with development mandate will also not fall under the disinvestment agenda.
6. Services like **power transmission, gas transportation, space, telecom, information and technology**, infrastructure finance companies, banking and insurance companies and development of airports, ports and highways have also been **categorised as strategic sectors for PSU presence**.
7. According to the Public Sector Enterprise Survey 2018-19, which is the latest available, **there are in all 257 central PSEs (CPSEs)** of which **184 were profit-making enterprises**.
8. Of these, there are **43 CPSEs in technical consultancy services, 36 in heavy and medium engineering sector**, and **23 in transport and logistics**.
9. For the financial year ending **March 31, 2021**, the government had set a **disinvestment target of Rs 2.1 lakh crore**, of which Rs 1.2 lakh crore is expected from strategic divestments.

ECONOMIC SURVEY 2020-21

The Economic Survey of 2020-21 was published on 29 January 2021. Like in the previous years, the **Economic Survey tries to summarise the state of the Indian economy** across various dimensions. India's Economic Survey 2021-22, forecast a "**V-shaped**" economic recovery, emphasising the government's policy response to the Covid-19 pandemic.

Key takeaways from the Economic Survey 2021-22

1. The **estimated real GDP growth for FY22 at 11 per cent** is the highest since Independence.
2. **Global economic output is estimated to fall by 4.4 per cent in 2020**, the sharpest contraction in a century. Advanced economies were hit harder, in terms of lives and economic output, compared to Emerging Market Developing Economies.
3. Overall, India is expected to witness **current account surplus** during the **current financial year after a gap of 17 years**.
4. The **foreign exchange reserves rose to an all-time high** of US \$586.1 billion as on 8 January 2021.
5. **Agriculture sector has remained the silver lining** while **contact-based services, manufacturing, construction were hit the hardest**. Starting July, a **resilient V-shaped recovery is well underway**, as demonstrated by the recovery in GDP growth and the sustained resurgence in high-frequency indicators such as power demand, E-way bills, GST collection, steel consumption, etc.
6. **Inflation**, mainly driven by food prices, **remained above 6 per cent** for much of the year, given supply disruptions. The softening of CPI inflation recently reflects the easing of supply-side constraints that affected food inflation.
7. **Trade balance with China and the US improved** as imports slowed.
8. The Survey notes that an **increase in public spending on the healthcare from 1 per cent to 2.5-3 per cent of GDP** – as envisaged in the National Health Policy 2017 – can decrease the **out-of-pocket expenses from 65 per cent to 30 per cent** of overall healthcare spend.
9. A public investment programme centred around the **National Infrastructure Pipeline** is likely to accelerate the demand push and further the recovery.
10. It suggests that **telemedicine needs to be harnessed to the fullest by investing in internet connectivity** and health infrastructure.
11. **India entered the top 50 innovating countries for the first time in 2020** since the inception of the **Global Innovation Index in 2007**, by improving **its rank from 81 in 2015 to 48 in 2020**. India ranks first in Central and South Asia, and third amongst lower-middle-income group economies.
12. The **National Health Mission (NHM)** has played a critical role in mitigating inequity as the access of the poorest to pre-natal and post-natal care as well as institutional deliveries has increased significantly. Therefore, in **conjunction with Ayushman Bharat**, the emphasis on NHM should continue.

13. **PM-JAY is being used significantly for high frequency**, low-cost care such as dialysis and continued to be utilised without disruption even during the Covid pandemic and the lockdown.
14. **General medicine exhibited a V-shaped recovery** after falling during the lockdown and reached pre-Covid-19 levels in December 2020.
15. Never in the history of **sovereign credit ratings has the fifth-largest economy in the world** been rated as the lowest rung of the investment-grade (BBB-/Baa3).
16. Reflecting the economic size and thereby the ability to repay debt, the fifth-largest economy has been predominantly rated AAA.
17. China and India are the only exceptions to this rule – **China was rated A-/A2 in 2005** and now **India is rated BBB-/Baa3**.

STARTUP INDIA SEED FUND

Prime Minister on 16 January 2021 announced the **launch of Rs 1,000-crore 'Startup India Seed Fund'** to support startups and help budding entrepreneurs pursue innovative ideas. Addressing the '**Prarambh: Startup India International Summit**', PM exuded confidence that the growth of startups will help in generating jobs and improving lives of people in the region.

What

1. In order **to provide initial capital for startups**, the nation is launching **an Rs 1,000 crore Startup India Seed Fund**.
2. This will help in **setting up new startups** and promote their growth, the Prime Minister said.
3. The summit marked the **fifth anniversary of the Startup India initiative** launched by PM on this day in 2016.
4. The government has been implementing the **Fund of Fund Scheme** to help startups raise equity capital.
5. **Startups in India are not limited to big cities** and about 40 per cent of such budding entrepreneurs are coming from **tier-II and -III cities**.
6. PM said in 2014 there were **only four startups in the unicorn club**, but today there are more than 30.
7. PM informed that **11 startups entered the unicorn club in 2020**.
8. India is the **world's third largest startup ecosystem**. There are **over 41,000 startups in the country**.

UNCTAD REPORT

Boosted by investments in the digital sector, foreign direct investment (FDI) in India grew 13% to \$57 billion in 2020, the **United Nations Conference on Trade and Development (UNCTAD)** said in its '**investment trends monitor**' report even as the global inflows plummeted 42% compared to 2019.

What

1. **India**, another major emerging economy, also **recorded positive growth (13%)**, boosted by **investments in the digital sector**, it said in its preliminary estimates for 2020.
2. **China was the world's largest FDI recipient**, with flows to the Asian giant rising by 4% to \$163 billion, according to UNCTAD.
3. As per official data, **FDI equity inflows into India grew 21%** to \$35.33 billion in the April-October period of fiscal 2021 from \$29.31 billion a year earlier.
4. **Global FDI collapsed in 2020** to an estimated \$859 billion from \$1.5 trillion in 2019.
5. As per the **Geneva-based organisation, India and Turkey are attracting record numbers of deals in IT consulting and digital sectors**, including e-commerce platforms, data processing services and digital payments.
6. **Indian IT companies have announced a 30% increase in acquisitions**, targeting European and other markets for information technology services.

PROPOSAL OF 'GREEN TAX' APPROVED

The **Centre plans to notify** a system of imposing “**green tax**” on **older vehicles in a move to disincentivise the use of polluting vehicles**, and to **curb pollution** in the country. **Union Road Transport and Highways Minister Nitin Gadkari have approved the proposal** and the centre has sent it to the states for consultation after which it will be notified.

What

1. Vehicles like strong hybrids, electric vehicles and those running on **alternate fuels like CNG, ethanol and LPG** will be exempted while the revenue collected through the **green tax will be utilised for tackling pollution**, the Ministry of Road Transport and Highways said in a statement on 25 January 2021.
2. **Transport vehicles older than eight years could be charged green tax** at the time of renewal of fitness certificate at the rate of 10 to 25 per cent of road tax.
3. **Personal vehicles are proposed to be charged green tax at the time of renewal of registration certification after 15 years**; public transport vehicles, such as city buses, will be charged lower green tax; higher green tax (50 per cent of road tax) will be levied on vehicles being registered in highly polluted cities.
4. **Differential tax** will also be charged **depending on fuel (petrol/ diesel)** and the type of vehicle.
5. According to the ministry, **the revenue collected from the green tax will be kept in a separate account** and will be used for tackling pollution.
6. Listing the benefits of the green tax, the ministry said that **it will dissuade people from using vehicles which damage the environment** and motivate them to switch to newer, less polluting vehicles.

INDIA IN IER REPORT

Germany ranks first in the PHDCCI International Economic Resilience (IER) Rank followed by **India and South Korea** at second and third positions, respectively, according to the report released by **industry body PHDCCI**. **India will emerge as the most resilient economy after Germany in 2021** exhibiting a strong “**economic resurgence**” to the global economic turmoil caused by the **COVID-19 pandemic**, according to a report.

What

1. It is based on **analysis of five lead macroeconomic indicators** reflecting a country’s economic performance including **real GDP growth rate, merchandise export growth rate, current account balance** (as percentage of GDP), general government net lending/borrowing (as percentage of GDP) and **gross debt-to-GDP ratio**.
2. **India’s IER Rank stands at second** among the top-10 leading economies, indicating **strong resilience of the Indian economy** to the daunting pandemic of COVID-19.
3. **India’s real GDP growth rate is projected to be the highest** at **11.5 per cent** in the year 2021 among the top-10 leading economies in the world.
4. The merchandise export volume growth is estimated to be the strongest at **14 per cent in the year 2021**, reflecting the great potential that the economy holds in terms of its international presence.

SCIENCE AND TECHNOLOGY

HAWK-I SUCCESSFULLY TEST FIRES SAAW

In a boost to the **indigenous Hawk-i programme**, defence PSU **Hindustan Aeronautics Limited (HAL)** on 21 January 2021 **successfully test fired a Smart Anti Airfield Weapon (SAAW)** from the **Hawk-i aircraft off the coast of Odisha**. The test **was done in a textbook manner and met all mission objectives**. The **telemetry and tracking systems** captured all the mission events confirming the success of the trials.

What

1. The **indigenous stand-off weapon** has been **developed by Defence Research and Development Organisation’s (DRDO) Research Centre Imarat (RCI)**.
2. It is the **first smart weapon fired from an Indian Hawk-Mk132**.
3. The SAAW is an aircraft launched, advanced, precision strike weapon of **125kg category** used to attack and destroy enemy airfield assets such as radars, bunkers, taxi tracks, runways within a **range of 100 kms**.
4. SAAW has been earlier successfully test fired from **Jaguar aircraft**.
5. The **Company owned Hawk-i platform** is being extensively used for certification of systems and **weapons developed indigenously by DRDO and CSIR labs**.
6. The **Hawk-i is HAL’s internally funded programme** offering the armed forces an upgrade and combat capability for the Hawk, **transforming it into an Advanced Jet Trainer (AJT)**, providing training on sensors and weapons in peacetime into a potent combat platform during conflict.

INDIA'S POSITION IN SCIENTIFIC PUBLICATIONS

India has seen an exponential increase in the number of scientific publications over the last 10 years and is in the third position globally after China and the US, the Department of Science and Technology (DST) said on 22 January 2021. Of the 13,045 patents in 2017-18, as many as 1,937 were by Indians. Out of 15,550 patents filed by Indians at Indian Patent Office during the period, 65 per cent were filed from Maharashtra, Karnataka, Tamil Nadu and Delhi, the DST said.

What

1. India's national investment in research and development (R&D) has increased from Rs 1, 13,825 crore in 2017-18 to Rs 1, 23,847 crore in 2018-19.
2. At the same time, various initiatives of the DST such as the National Initiative for Developing and Harnessing Innovations (NIDHI) have played a crucial role to reach this position.
3. The implementation of initiatives like NIDHI has nurtured 3,681 start-ups through the network of around 150 incubators created by the DST and generated 1992 intellectual property.
4. Further, in the last five years, jobs generated in the form of direct employment were 65,864 and Rs 27,262 crore of economic wealth.
5. According to data from the US agency, the National Science Foundation (NSF), India is currently in third place, only behind China and the United States, with 1,35,788 scientific articles in the year 2018.
6. The NSF database shows that India's growth rate of scientific publication was 12.9 per cent, as against the world average of 4.9 per cent.

AKASH-NG MISSILE SUCCESSFULLY LAUNCHED

The Akash-NG (New Generation) Missile was successfully launched by the Defence Research and Development Organisation (DRDO) on 24 January 2021 and intercepted the target with 'textbook precision'. The launch was conducted from an Integrated Test Range off the coast of Odisha.

What

1. Akash-NG is a new generation Surface to Air Missile meant for use by Indian Air Force with an aim of intercepting high maneuvering aerial threats.
2. The test launch, carried out by a combined team of DRDO, BDL & BEL in the presence of the representatives of the Indian Air Force, met all test objectives by performing high maneuvers during the trajectory.
3. Performance of the Command and Control system, onboard avionics and aerodynamic configuration of the missile was successfully validated.
4. During the test launch, the entire flight path of the missile was monitored and the flight data was captured by various Range instruments such as Radar, EOTS and Telemetry systems deployed by the Integrated Test Range in Chandipur.
5. The Multi-Function Radar was tested for its capability of integration with the system.

- The Akash-NG system has been developed with better deployability compared to other similar systems with a **canisterized launcher** and a much smaller ground system footprint.

UNION BUDGET MOBILE APP LAUNCHED

Finance minister Nirmala Sitharaman launched the **Union Budget mobile app** on 23 January 2021, even as final stages of **FY 2021-22 Budget preparations** began with the **Halwa ceremony**. The customary halwa ceremony was held in North Block and is performed every year before the “**lock-in**” **process of Budget preparation** begins. The **mobile app** will provide **easy and quick access to Union Budget information to all stakeholders**, as the Budget will be delivered in **paperless form for the first time**.

What

- The **mobile App facilitates** complete **access to 14 Union Budget documents**, including the **Annual Financial Statement** (commonly known as Budget), **Demand for Grants (DG)**, **Finance Bill** etc. as prescribed by the Constitution.
- The documents will be available after the **completion of the Budget Speech** by the Finance Minister. Sitharaman will present the Budget on 1 February 2021.
- The app has a **user-friendly interface** with embedded features of downloading, printing, search, zoom in and out, bidirectional scrolling, table of contents and external links, etc.
- It **will have English and Hindi language support** and will be available on both Android and iOS platforms. The app can also be downloaded from the Union Budget Web Portal (www.indiabudget.gov.in).
- Union Budget mobile app** has been **developed by the National Informatics Centre (NIC)** under the guidance of the **Department of Economic Affairs (DEA)**.

Flashback

- This will be the **first time since the presentation of independent India's first budget on 26 November 1947** that the documents containing income and expenditure statement of the Union government along with the finance bill, detailing new taxes and other measures for the new financial year, **will not be physically printed**.
- In an **unprecedented initiative**, Union Budget 2021-22 will be delivered in **paperless form for the first time**.

NET METERING FOR INDIVIDUAL HOUSEHOLD

West Bengal government has allowed **net metering for individual household rooftop solar panels starting from 1 KW**. Earlier **institutional, commercial, industrial and cooperative housing** were only allowed the benefit of net metering and that too **for 5 KW capacities onward**.

What is Net Metering?

1. **Net metering** is a **billing mechanism** that **credits solar energy system owners for the electricity they add to the grid.**
2. For example, if a residential customer has a **PV system on their roof**, it may generate more electricity than the home uses during daylight hours. If the home is **net-metered**, the electricity meter will run backwards to provide a credit against what electricity is consumed at night or other periods when the home's electricity use exceeds the system's output.
3. **Customers are only billed for their "net" energy use.** On average, **only 20-40% of a solar energy system's output** ever goes into the grid, and this exported solar electricity serves nearby customers' loads.

COW DUNG CHIPS REDUCE CAESIUM RADIOACTIVITY

Cow dung 'chip', reduced harmful radiation emitted from **mobile phones**, to widespread outrage by the scientific community, the **Rashtriya Kamdhenu Aayog (RKA)** has come up with 'scientific evidence' to back the claim. The **cow dung 'chips' led to a 60 per cent reduction in radiation.** The samples of the chips, which were prepared under the guidance of RKA Chairman Dr. Vallabhbhai Kathiria, were analysed by the **Department of Physics in Saurashtra University, Gujarat.**

What

1. The samples of different thickness were tested using the **Geiger Muller (GM) counter.**
2. The Instrument used for this experiment was the **Nucleonix GM Counting system GC601A.**
3. The radioactive source used for this experiment was **Caesium (Cs137)** at the **applied voltage 450 V constant. A Geiger Muller counter is radiation detection** and measuring instrument.
4. According to the test report, the experiment was carried out under a controlled condition and without any substance between the **radioactive source and detector.**
5. After that, the samples of cow dung of different thickness were kept one by one between the source and the detector and the counts in the detectors were observed primarily.

Flashback

1. In **October 2020, cow dung 'chip'** was unveiled and noted that it would **reduce the radiation from mobile phones.**
2. Several scientists and science educators had then asked for scientific evidence to back his claims.
3. The test concludes that **cow dung can absorb upto 60 per cent of radiation.**
4. Research on the **benefits of Panchgavya-based products** should be conducted with positive attitude for next generation.
5. The **All India Online Kamdhenu Gau-Vigyan Prachar-Prasar Examination** is scheduled to be held on 25 February and is for students of all ages — from primary to university-level — as well as for all citizens.

- The **counts per 100 seconds were in the range of 325 and 361**, according to the report, depending on the thickness of cow dung. Without any cow dung chip, the radiation reading was 798 counts per 100 seconds.

SPACE X BREAKS INDIA SPACE RECORD

SpaceX on 24 January 2021 night **broke a world space record by launching 143 satellites in quick succession**, beating **India's record of deploying 104 satellites** in February 2017. The launch vehicle for the **SpaceX record-breaking flight** was the **Falcon 9** and the mission was designated as **Transporter-1**. The lift-off at Cape Canaveral in Florida, at one point, **the rocket flew over India and its signal was picked up by Isro's Telemetry, Tracking and Command Network at Bengaluru**.

What

- The launch marks the first dedicated mission for **SpaceX's SmallSat Rideshare Program**, which enables small-satellite customers to book a ride to orbit with SpaceX directly.
- The **143 satellites** launched on 24 January 2021 included commercial and government **CubeSats, microsats**, what are known as orbiter transfer vehicles and **10 Starlink satellites** — the maximum number of spacecraft ever to be deployed in a single mission.
- This **batch of Starlink satellites was the first in the constellation** to be placed in the polar orbit.
- The nearly 90-minute deployment sequence of the satellites having different roles was nail-biting because they separated in a span of a few seconds and a minute.
- Onboard was also a spacecraft belonging to Nasa. With these satellites, SpaceX aims to provide **near-global broadband internet coverage all over the world by 2021**.

TESS MISSION DISCOVERS EXOPLANET

National Aeronautics and Space Administration's (NASA) Transiting Exoplanet Survey Satellite (TESS) has discovered an **exoplanet in the Milky Way galaxy**. Researchers believe **it is 10 billion years old**, more than **twice as old as our Sun**. The planet named **TOI-561b** orbiting outside our solar system is **1.5 times the size of the Earth**, has more mass than Earth, but almost the **same density**. The planet orbits around its sun, which is located in the galactic thick disk, very quickly and completes it in about 12 hours.

What

- The **discovery of the planet** was made public in the **237th meeting of the American Astronomical Society** and later accepted for publication in Astronomical Journal.
- The meeting was held virtually due to the Covid-19 pandemic.
- The study also mentions that the **temperature on the planet's surface** reaches **1,726 degrees Celsius** which makes it not suited for habitation.
- As per a report by CNN, the rocky planets mass, radius and density were calculated with the help of data collected at the **WM Keck Observatory in Hawaii**.

5. **TOI-561b is one of the oldest rocky planets** yet discovered University of Hawaii postdoctoral fellow and team lead Lauren Weiss said in a statement.
6. Its existence shows that the **universe has been forming rocky planets** almost since its inception **14 billion years ago**.
7. What makes **this 'Super-Earth'** more intriguing is its density, considering the size in comparison to Earth. However, **older planets are less dense** owing to the less quantity of heavy metals found on them.
8. These elements are found on our planet because it was formed after the **Sun exploded in Supernova** and **distributed these elements into space**.

SOUTH ASIA'S FIRST ROBOTICS SURGERY

South Asia's first robotics surgery system Innovations, incubated at the **Andhra Pradesh Medtech Zone (AMTZ)** in Visakhapatnam, has come up with **South Asia's first medical robotics surgery system**, which would cost less than a third of what imported systems cost. **Called SSI Mantra (Multi-Arm Novel Tele Robotic Assistance)**, the system, tested on 18 procedures in clinical trials at **New Delhi's Rajiv Gandhi Cancer Institute**, is capable of carrying out surgeries in **all major surgical specialities** including urology, general surgery, gynaecology, thoracic, cardiac and head and neck surgeries.

What

1. The company demonstrated the **robotic surgery system** to the public for the first time on 19 January 2021.
2. **SSI Mantra** would be priced at Rs 4-5 crore, making it **affordable for a large number of hospitals** in the country.
3. **Robotic surgery systems** have been around for **nearly three decades, 93 per cent of them are used in the US, Europe and Japan**.
4. There are **only 72 such systems installed in Indian hospitals**.
5. The firm, which already has **expressions of interest for 85 machines**, hopes to roll out the **first indigenous robotic system** in the next six months.
6. **More than 60 per cent of the materials** used in the system **have been sourced locally**, barring some sophisticated instruments that have been imported from countries such as **Germany and Switzerland**.

SRISHAKTISAT DEVELOPED FOR ISRO

Students of Sri Shakti Institute of Engineering and Technology, in Coimbatore, have **designed and developed a satellite** at a cost of Rs 2.5 crore. It was inaugurated by chairman of **Indian Space Research Organisation (ISRO)** Dr R Sivan on 28 January 2021.

What

1. The formation of the **Indian National Space Promotion and Authorisation Centre** in **June last** by Prime Minister inspired 12 students of the institute to collaborate with ISRO and develop '**SriShaktiSat**'.
2. After installing **Sri Shakti Sat Ground Station in collaboration with Serbia-based Community for Space Programme Development**, the institute became a member of the **Satellite Networked Open Ground Station (SATNOGS) project**.

3. **SATNOGS** aimed at **providing technologies for a distributed network of low earth orbit satellite** ground stations.
4. **Srishaktisat would be weighing only 460 grams** but can perform like any other nano satellites weighting upto 10 kgs.
5. The satellite would be used as a **technology demonstrator for Internet of Things in space** and for **inter-satellite communication**.
6. After the virtual inauguration, the satellite would be handed over to ISRO in February for its use.

MISCELLANEOUS

INDIA'S FIRST LABOUR MOVEMENT MUSEUM

The **country's first Labour Movement Museum**, showcasing the **history of world labour movement**, would be launched in Kerala's houseboat tourism hub, **Alappuzha**. The museum will feature a **huge repository of documents** and **exhibits that shaped the labour movements** across the continents and impacted Alappuzha, the **cradle of the labour movement in the country**, in particular and Kerala in general, state Tourism department said on 17 January 2021.

What

1. **Located alongside the Port and Coir museums** displaying the town's rich maritime heritage, the Labour Movement Museum, the **first such window in the country** on the class struggle and spirited fight of workers, is part of a larger project that will also be of tourist appeal.
2. The **New Model Cooperative Society Limited**, previously run by the **Bombay Company**, has been converted into the **Labour Movement Museum**.
3. It will portray, through pictures, documents and other exhibits, the growth of the world labour movement and the history of Kerala's labour movement.
4. Packed with history predating the advent of the **Western colonialism**, Alappuzha had a virtual monopoly over the **production and shipping of coir made of coconut husk**, a product that had **immense global demand**.
5. **Alappuzha has a rich commercial and maritime heritage** dating back to the ancient times and connected to distant lands.
6. The Port Museum gives a vivid idea of Alappuzha's commercial links with the world outside through the sea.

TRIPARTITE AGREEMENT FOR MINING OF POTASH

The Centre on 22 January 2021 said a **tripartite pact was signed** among **Mineral Exploration Corporation Ltd (MECL)**, **Rajasthan State Mines & Minerals Ltd (RSMML)** and the **Department of Mines and Geology (DMG) of Rajasthan** for taking up **feasibility studies of solution mining of potash** in the state.

What

1. MoU will pave the way to undertake feasibility studies for **harnessing sub-surface salt deposits** through solution mining **utilise Rajasthan's rich mineral reserves**, boost its economy and **establish it as a hub of solution mining of potash, the 1st in the country.**
2. **Rajasthan has huge potash and halite resources** spread across 50,000 sq kms in the **Nagaur - Ganganagar basin in the northwest.**
3. **GSI (Geological Survey of India)** and **MECL** have established 2476.58 million tonnes and 21,199.38 million tonnes of **potash and halite**, respectively.
4. **Bedded salt formations are strategically useful for underground oil storage**, repositories for **hydrogen, ammonia and helium gas**, storage of **compresses gas** and nuclear waste.
5. **Potash and sodium chloride** from the bedded salt are **extensively used in the fertiliser industry** and the chemical industry, respectively.
6. MECL has been assigned as the programme manager for taking up the feasibility study in the state with the help of an international consultant.

PARAKRAM DIWAS

In order to **honour and remember Netaji's indomitable spirit** and selfless service to the nation, the Government of India has decided to **celebrate his birthday** on 23 January every year as '**Parakram Diwas**' to inspire people of the country, especially the youth, to act with **fortitude in the face of adversity as Netaji did**, and to infuse in them a spirit of **patriotic fervour.**

What

1. Earlier this month, the **Ministry of Culture held a high-level committee**, headed by Prime Minister Narendra Modi, **to commemorate the 125th birth anniversary** of Netaji Subhas Chandra Bose.
2. Meanwhile, President Ram Nath Kovind and Prime Minister Narendra Modi on 23 January 2021 **paid tributes to Netaji Subhas Chandra Bose** on his **125th birth anniversary.**
3. The President said **Netaji is one of our most beloved national heroes** who made an extraordinary contribution to India's freedom struggle.
4. **Netaji Subhash Chandra Bose was born in Cuttack** (present-day Odisha) on **23rd January** to Janakinath Bose and Prabhavati Dutt.
5. **Bose was an active part of the youth wing of Indian National Congress** before becoming the **Congress President back in 1938.**

SECOND UNITED NATIONS HLAB

Indian development economist Jayati Ghosh is among 20 prominent personalities **appointed by the United Nations to a high-level advisory board** that will provide **recommendations for the UN Secretary-General** to respond to the **current and future**

socio-economic challenges in the **post-COVID-19 world**. Ghosh, 65, is a **professor of economics** at **University of Massachusetts Amherst**. She has taught economics at **Jawaharlal Nehru University** for **nearly 35 years** and has authored several books.

What

1. The **UN Department of Economic and Social Affairs (UNDESA)** announced that the 20 "prominent personalities, globally renowned for their intellectual leadership in economic and social fields, will form the **second United Nations High-level Advisory Board (HLAB) on Economic and Social Affairs**."
2. Over the next two years, the **board will strengthen the United Nations** thought leadership on sustainable development and reinforce its impact on policies at every level – from global to local.
3. The **board will closely collaborate with UNDESA** to provide guidance and focused recommendations for **UN Secretary-General Antonio Guterres** to respond to **current and future socio-economic challenges** in the post-COVID-19 world and to advance the **Decade of Action for the Sustainable Development Goals (SDGs)**.

Flashback

1. The **first United Nations High-level Advisory Board was established in June 2018** as a key element of the efforts to support the UN Member States in implementing the **2030 Agenda for Sustainable Development**.
2. Over the course of the last two years, the interventions and insights of the board greatly expanded the understanding of UNDESA of some of the **most burning economic and social issues** shaping the world and **inspired the United Nations** to break new ground in policy research.

INDIAN WINS 'MICHAEL AND SHEILA HELD' PRIZE

Nikhil Srivastava, a **young Indian mathematician**, has been named winner of the prestigious **2021 Michael and Sheila Held Prize** along with two others for solving long-standing questions on the **Kadison-Singer problem** and on **Ramanujan graphs**. **Srivastava** along with **Adam Marcus** and **Daniel Alan** will receive the **2021 Michael and Sheila Held Prize**, the National Academy of Sciences, Washington said.

What

1. **Srivastava, Marcus and Spielman** solved long-standing questions on the **Kadison-Singer problem** and on **Ramanujan graphs**, and in the process uncovered a **deep new connection between linear algebra, geometry of polynomials, and graph theory** that has inspired the next generation of **theoretical computer**

Flashback

1. The **Michael and Sheila Held Prize** is presented **annually** and honours **outstanding, innovative, creative, and influential research** in the areas of combinatorial and discrete optimisation, or **related parts of computer science**, such as the design and analysis of algorithms and complexity theory.
2. The **prize was established in 2017** by the **bequest of Michael And Sheila Held**.

scientists.

2. They published **new constructions of Ramanujan graphs**, that **describe sparse**, but highly-connected networks, and a solution to what is known as the **Kadison-Singer problem**, a decades-old problem that **asks whether unique information can be gleaned from a system** in which only some of the features can be observed or measured.
3. **Srivastava is currently Associate Professor of Mathematics** at the University of California.
4. Their **groundbreaking papers** on the questions, both published in 2015, solved problems that mathematicians had been working on for several decades.

A STUDY ON CHLORIDE-RICH PARTICLES

An international study led by researchers from **Indian Institute of Technology Madras (IIT Madras)** has found **chloride to be the highest inorganic fraction in particulate matter**, primarily responsible for haze and fog formation in Northern India including National capital Delhi. The Study has been published in a prestigious peer-reviewed International Journal Nature Geoscience.

What

1. Many studies in the past have identified **PM2.5 (particulate matter or aerosol particles with diameter less than 2.5 micrometre)** as a major pollutant, responsible for haze and fog formation over **Indo-Gangetic plain including Delhi**.
2. However, the role of PM2.5 and detailed chemistry of haze and fog formation over national capital was poorly understood.
3. Such a **lack of understanding was the biggest hurdle** in developing the policies to improve the air quality and visibility.
4. This study now enhances the understanding about the **precise role of PM2.5 in chemistry of fog formation**, which will help policy makers to frame better policies for improving the air quality and visibility over national capital.
5. Every year, **most of the Indo Gangetic Plain invariably is engulfed in a dense fog** and haze, particularly during the months of December and January.
6. This study not only provides the scientific explanation for source of **high chloride in PM2.5 mass over Delhi** but also quantifies its role in haze and fog formation and visibility reduction.

Flashback

1. The study explains that complex chemical reactions involving **Hydrochloric Acid (HCl)**, which is directly emitted in the atmosphere from **plastic contained waste burning** and few industrial processes, is **primarily responsible for high PM2.5 chloride** and subsequent haze and fog formation over Delhi during chilly winter nights.
2. The study, **led by IIT Madras** was carried out in collaboration with **Max Planck Institute for Chemistry**, Germany; Harvard University, USA; Georgia Institute of Technology, USA; and Manchester.

NOBEL LAUREATE PAUL CRUTZEN DIED

Nobel Prize-winning chemist **Paul Crutzen**, died on 29 January 2021 at 87. **Crutzen discovered in 1970** that **nitrogen pollution was capable of destroying ozone in the atmosphere**, a critical layer of that **protects living things from the sun's ultraviolet radiation**.

What

1. The implications were potentially dangerous, as this ozone gas thinned into a “hole” above the **Southern Hemisphere** that threatened to leave millions of people exposed. **Crutzen shared the 1995 Nobel Prize in Chemistry for discovering the risk to the ozone layer.**
2. He was a great example to all scientists, because he was not afraid to point out the moral implications of the changes that humans are causing to the atmosphere.
3. Crutzen's science clearly drove political action. A **1987 treaty**, known as the **Montreal Protocol**, led to a worldwide phase-out of ozone-eating chemicals, including the **chlorofluorocarbons** used in refrigeration and other applications..