My Notes....

NATIONAL

UNESCO WORLD HERITAGE CITIES

The **historical fort cities of Gwalior and Orchha in Madhya Pradesh** have been **included in the list of UNESCO's world heritage cities** under its **urban landscape city programme**. An official of the government's public relations department on 7 December 2020 said tourism experts have termed the inclusion as a major achievement for the state.

What

1. The **United Nations Educational, Scientific and Cultural Organization (UNESCO)**, an agency of the United Nations, aims at **promoting world peace and security** through **international cooperation in education, the sciences, and culture**.

2. A **UNESCO team will visit the state next year** and after having a look at the heritage properties will **prepare a master plan for their development and conservation**.

3. The project will prove to be an **example for South Asia**.

4. **Under the plan UNESCO will suggest best measures and resources** for the development of these places under the **Historic Urban Landscape recommendations**.

5. After inclusion in the **World Heritage City list**, chemical treatment of historic spots like **Mansingh Palace**, **Gujri Mahal** and **Sahastrabahu Temple** will be done so that art inscribed on them will become more visible.

About Gwalior

1. **Gwalior was established in 9th century** and **ruled by Gurjar Pratihar Rajvansh**, Tomar, Baghel Kachvaho and Scindias.

2. The memorabilia left by them is found in abundance in memorials, forts, and palaces in the area.

3. **Gwalior is known for its palaces and temples**, including the intricately carved **Sas Bahu Ka Mandir temple**.

4. The **Gwalior Fort occupies a sandstone plateau** overlooking the city and is accessed via a winding road lined with sacred Jain statues.

5. Within the fort's high walls is the 15th-century Gujari Mahal Palace, now an archaeological museum.

About Orchha

1. **Orchha is popular for its temples and palaces** and was the **capital of the Bundela kingdom** in the 16th century.

2. The famous spots in the town are **Raj Mahal**, **Jehangir Mahal**, **Ramraja Temple**, **Rai Praveen Mahal**, and **Laxminarayan Mandir**.

INDIA IN UN'S HDI 2020

India dropped one spot to 131 among 189 countries in the **human development index (HDI) 2020**, according to a report released by the **United Nations Development**

Programme (UNDP) on 15 December 2020. Human Development Index is the **measure of a nation's health**, **education**, and **standards of living**. **India's HDI value for 2019 is 0.645** which put it in the **medium human development category**. **India** had ranked **130 in 2018** in the index.

What Human Development report said?

1. **Life expectancy of Indians at birth in 2019 was 69.7 years** while Bangladesh has a life expectancy of 72.6 years and Pakistan 67.3 years.

2. **India, Bhutan (129), Bangladesh (133), Nepal (142), and Pakistan** (154) were ranked among countries with **medium human development**.

3. **Norway topped the index**, followed by Ireland, Switzerland, Hong Kong and Iceland.

4. India's gross **national income per capita fell to USD 6,681 in 2019** from **USD 6,829 in 2018** on purchasing power parity (PPP) basis.

5. **Purchasing power parity or PPP** is a **measurement of prices in different countries that uses the prices of specific goods** to compare the absolute purchasing power of the countries' currencies.

India in HDI 2020

1. In India different responses in **parent behaviour**, as well as some disinvestment in girls' health and education, have led to **higher malnutrition among girls than among boys** as a consequence of shocks likely linked to climate change.

2. The report said that under the **Paris Agreement**, **India pledged to reduce the emission** intensity of its **GDP from the 2005 level by 33–35 per cent by 2030** and to obtain 40 per cent of electric power capacity from non–fossil fuel sources by 2030.

3. As part of the plan, the **National Solar Mission** aims **to promote solar energy for power generation** and other uses to make solar energy competitive with fossil fuel-based options.

4. **Solar capacity in India increased** from **2.6 gigawatts in March 2014 to 30 gigawatts in July 2019**, achieving its target of 20 gigawatts four years ahead of schedule.

5. **In 2019**, **India ranked fifth** for installed **solar capacity**, the report said.

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6. The report said evidence from **Colombia to India** indicates that **financial security and ownership of land improve women's security** and **reduce the risk of gender-based violence**, clearly indicating that owning land can empower women.

7. Indigenous children in **Cambodia, India and Thailand** show **more malnutrition-related issues** such as **stunting** and **wasting**.

INDIA IN CCPI 2021

India remains in the top 10 for the second year in a row in the latest **global Climate Change Performance Index (CCPI)** released in Germany on 7 December 2020. The **biggest current emitter of greenhouse gases (GHG) China figures at 33rd rank** while the largest historical polluter, the **USA, appears at the bottom of the list**.

What

1. **India slid one position down** from ninth in 2019 to **10th this year** the country's journey towards climate protection has been consistent with it improving its ranking

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from 31st in 2014.

2. Globally none of the countries assessed for the annual CCPI report are, however, on the path to meet their **Paris Agreement commitment** of keeping **global warming increase below 2 degree celsius** by the end of the century and actually to make efforts to restrict it to **1.5 degree celsius rise**.

3. **CCPI** is an **important tool to enhance transparency in international climate politics** and enables comparison of climate protection efforts and progress made by individual countries.

4. The **CCPI 2021**, **covering the year 2020**, shows that **only two G20 countries - the UK and India** - are among the **high rankers** while six others - the **USA, Saudi Arabia, Canada, Australia, South Korea and Russia (52nd)** – are at the bottom of the index.

Flashback

1. The list is **prepared by assessing performances of 57 countries and European Union (as a whole)** in **four categories** - GHG emissions (40%), **renewable energy (20%), energy use (20%)** and **climate policy (20%)**.

2. These 57 countries and the EU collectively are responsible for about 90% of global GHG emissions.

3. The **CCPI is developed by not-for-profit organisations Germanwatch** and **NewClimate Institute (Germany)** together with the **Climate Action Network (CAN International)**.

5. It's the **second time in a row that the USA is bringing up the rear**, below Saudi Arabia.

6. The report, covering CCPI, shows that overall, **GHG emissions have increased slightly**, but are actually falling in more than half of the countries (32) surveyed.

CANNABIS IS NOT A DANGEROUS NARCOTIC: UN

India has voted with the majority at the United Nations to **remove cannabis** and cannabis resin from the list of most dangerous substances in the **flagship international Convention on narcotic drugs**. The decision taken by the **UN Commission on Narcotic Drugs (CND)** on 2 December 2020 at its ongoing **63rd session** will lead to changes in the way cannabis is regulated internationally. The CND zeroed-in on the decision to remove cannabis from **Schedule IV of the 1961 Single Convention on Narcotic Drugs** — where it was listed alongside deadly, addictive opioids, including heroin, the UN said in a news release on 2 December 2020.

What

1. **Twenty-seven of the CND's 53 Member States** — **including India**, the United States and most European nations — voted "Yes" on the motion to delete cannabis and cannabis resin from Schedule IV of the 1961 Convention.

2. **Twenty-five countries**, including **China, Pakistan, and Russia, voted "No"**, and there was **one abstention – Ukraine**. The session is being **chaired by Mansoor Ahmad Khan**, Pakistan's ambassador to Afghanistan.

3. With (this) historic vote", the UN said, "**the CND has opened the door to recognizing the medicinal and therapeutic potential** of the commonly-used but still largely illegal recreational drug".

4. Under **India's Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985**, the production, manufacture, possession, sale, purchase, transport, and use of cannabis

is a punishable offence.

5. **Charas, defined as "the separated resin**, in whatever form, whether crude or purified, obtained from the cannabis plant", is also covered by the NDPS Act.

CLIMATE AMBITION SUMMIT

Prime Minister on 12 December 2020 said **India has reduced emission intensity by 21 per cent over 2005 levels** and it isn't just on-track to achieve its Paris Agreement targets, but **will exceed them beyond expectations**. PM was speaking at the **Climate Ambition Summit** hosted by the **United Nations and United Kingdom** to mark the **fifth anniversary of the adoption of the Paris Agreement**.

What

1. India has reduced **emission intensity by 21 per cent over 2005 levels**.

2. **Solar capacity has grown** from **2.63GW in 2014 to 36 GW in 2020**.

3. **Renewable energy capacity is the fourth largest** in the world. It will **reach 175GW before 2022**.

4. **India has an even more ambitious target** now: **450GW of renewable energy capacity by 2030** and the country has also succeeded in **expanding its forest cover** and **safeguarding its biodiversity**.

5. India's contribution on a global level to fight climate change on the world stage, India has pioneered **two major initiatives** -- the **international solar alliance** and **coalition for disaster resilience infrastructure**.

> **Flashback**
>
> 1. The **Paris Agreement is a legally binding international treaty** on climate change.
>
> 2. The agreement was adopted by 196 parties at **21st Conference of Parties in Paris**, on 12 December 2015, and was **enforced on 4 November 2016**.

WORLD'S LARGEST RENEWABLE ENERGY PARK

Prime Minister laid the foundations on 15 December 2020 for what he said would be the **world's largest renewable energy park**, set to produce a **massive 30 gigawatts of electricity**. The vast project in **western Gujarat's Kutch region** spread over **1, 80,000 acres** -- the **size of Singapore** -- will contain **solar panels**, **solar energy storage units** and **windmills**.

What

1. The **hybrid renewable energy park** will be largest in the world and **generate 30,000 megawatts of power**, PM said as he inaugurated the energy park as well as an adjacent **desalination plant**.

2. The energy project will account for a large chunk of India's ambitious target of generating **175 GW in renewable energy by 2022** and **450 GW by 2030**.

3. It would also help **India reduce its carbon dioxide emissions** by up to **50 million tonnes per year**.

4. The **desalination plant will be able to process 100 million litres of water a day** for 8 lakh people living in the arid region.

5. The **renewable energy park will have two zones**: one, a **49,600-hectare hybrid park zone** that will accommodate **wind and solar power plants** of 24,800 MW capacities; and two, an **exclusive wind park zone** spread over 23,000 hectares.

What are desalination plants?

1. A **desalination plant turns salt water into water** that **is fit to drink.**

2. The most commonly used technology used for the process is **reverse osmosis** where an **external pressure is applied to push solvents from an area of high-solute concentration to an area of low-solute concentration** through a **membrane**.

3. The **microscopic pores** in the membranes allow water molecules through but leave salt and most other impurities behind, releasing clean water from the other side.

4. These plants are mostly set up in areas that have **access to sea water**.

FOUNDATION STONE OF NEW PARLIAMENT BUILDING

Prime Minister on 10 December 2020 **laid the foundation stone** of the **new Parliament building** in **Delhi**. The building is **expected to be completed by 2022** at an estimated cost of Rs 971 crore. The new building will showcase the **cultural diversity of the country**. Hopefully, in the **75th year of Independence (2022)**, Parliament session will be held in the new building, PM said.

What

1. The **existing building is a British-era structure**, designed by **Edwin Lutyens** and **Herbert Baker** who were responsible for planning and construction of New Delhi.

2. The foundation stone of the existing Parliament House was **laid on 12 February 1921** and the **construction took six years** and cost Rs 83 lakh at that time.

3. The opening ceremony was performed on 18 January 1927 by the then Governor-General of India, **Lord Irwin**.

4. **Foundation stone of the new Parliament building** in Delhi comes after the **Supreme Court gave the nod** to lay the foundation stone.

5. This move is to **celebrate 75 years of India's Independence in 2022** with a new building constructed by Indian architects and workers.

6. The **Tata Projects Limited won the bid to construct the new parliament building** in September 2020.

7. The design will integrate '**indigenous architecture**', involving nearly 2,000 workers for construction, 200 artists, and 9,000 others periphrastically, from different parts of the country.

FIRST EVER IWEI LAUNCHED

The '**India Workplace Equality Index (IWEI)**', touted as the **country's first comprehensive benchmarking tool** for **employers to measure their progress on LGBT+ inclusion** at the workplace, was launched on 10 December 2020 with its first report virtually announcing winners from among 65 companies which shared data on their diversity and inclusion practices.

The index measures nine areas:

1. Policies and benefits
2. Employee lifecycle
3. Employee network group
4. Allies and role models
5. Senior leadership
6. Monitoring
7. Procurement
8. Community engagement and
9. Additional work

What

1. The **IWEI comes two years after the Supreme Court's landmark reading down of Section 377**.

2. Activist Keshav Suri through his non-profit Keshav Suri Foundation, partnered with Pride Circle, Stonewall UK and FICCI, to bring the IWEI to India Inc.

3. **Twenty-one firms won under the gold category**, while **18 were placed under silver** and **13 got bronze**.

'HIMGIRI' MAKES FIRST CONTACT

'**Himgiri**', the **first of the three Project 17A ships** being built at Kolkata's **Garden Reach Shipbuilders and Engineers Limited (GRSE)**, made her first contact with the waters of **Hoogly River** on 14 December 2020. **Project 17A** has upheld India's vision for **Atmanirbhar Bharat**.

What

1. **P17A ships** have been **indigenously designed by Directorate of Naval Design (Surface Ship Design Group) - DND (SSG)**, and are being built at indigenous yards namely **Mazagon Dock Shipbuilders Limited (MDL)** and **GRSE**.

2. The ship has taken its name and crest of the **second Frigate of the Leander Class of ships**, which incidentally was launched 50 years ago in 1970.

3. Under the **Project 17A programme**, a total of **seven ships**, **four at Mazagon Dock Shipbuilders Limited (MDL)** and **three ships at GRSE** are being built with enhanced stealth features, advanced indigenous weapon and sensor fit along with several other improvements.

4. The launch of 'Himgiri' has showcased GRSE's commitment towards the building of **three state-of-the-art warships of P17A for Indian Navy**.

5. Over the years, **GRSE has emerged as a leading shipyard** having built over 100 ships.

6. The yard has **scaled up its infrastructure and skill sets** to meet new challenges in building of **P17A ships**.

INTERNATIONAL

HEIGHT OF MT EVEREST REVISED

Nepal and China on 8 December 2020 **jointly announced the revised height of the world's highest peak**, Mount Everest, as **8848.86 metres**. The Nepal government decided to measure the exact height of the mountain amid debates that there might have been a change in its height due to various reasons, including the **devastating earthquake of 2015**. Nepal recalculates the height of **Mount Everest at 8848.86 metres**. The **new height is 86 cms more** than the previous measurement.

Measurements over the years

1. **In 1856**, during the **Great Trigonometrical Survey**, Indian mathematician **Radhanath Sikdar** determined Everest is the highest mountain in the world.

2. Until the **advent of GPS**, attempts to measure its height used instruments such as the **theodolite** and the **surveyor's chain**, and **trigonometrical calculations**.

3. **In 1954**, the **Survey of India determined that the elevation of Everest is 8,848 m** (29,028 ft). This came to be recognised worldwide **except by China**.

4. China's contention was that the elevation of Everest should be taken as 8,844 m (29,017 ft) — 4 m shorter than the recognised elevation.

5. This was the finding of a **Chinese survey in 2005**.

6. And while the mountain rises from the **border between Nepal and China**, there was also a third estimate from far away, which was even higher.

7. **In 1999**, a **US** team put the **elevation at 29,035 feet** (nearly 8,850 m).

8. This survey was **sponsored by the National Geographic Society (of the US)** and it will still be used by the Society until the new measurement is verified, National Geographic reported on 8 December 2020.

9. Nevertheless, it was the **Survey of India's 1954 finding of 8,848 m** that has been the gold standard internationally until now.

FIRST COUNTRY TO APPROVE CULTURED MEAT

Singapore has given **U.S. start-up Eat Just** the Greenlight **to sell its lab-grown chicken meat**, in what the firm says is the **world's first regulatory approval** for so-called clean meat that does not come from slaughtered animals. Demand for alternatives to regular meat is surging due to consumer concerns about health, animal welfare and the environment.

What

1. **Plant-based meat options**, popularised by **Beyond Meat Inc and Impossible Foods**, increasingly feature on supermarket shelves and restaurant menus.

2. But so-called **clean or cultured meat**, which is grown from animal muscle cells in a lab, is still at a nascent stage given high production costs.

3. The **first-in-the-world regulatory allowance of real**, high-quality meat created directly from animal cells for safe human consumption paves the way for a forthcoming small-scale commercial launch in Singapore, Eat Just said on 2 December 2020.

4. **Globally more than two dozen firms** are testing lab-grown fish, beef and chicken,

hoping to break into an unproven segment of the alternative meat market, which Barclays estimates could be worth $140 billion by 2029.

4TH ARAB NATION TO TIES RELATIONS WITH ISRAEL

US President **Donald Trump** on 10 December 2020 announced that **Morocco agreed to begin normalising relations with Israel**, becoming the **fourth Arab state this year to join the Abraham Accords** and advancing a major foreign goal for Trump's outgoing administration.

What

1. **Morocco will also seek to develop innovative relationships** in the **economic and technological fields**.

2. As part of this goal, **there will be work on renewing liaison offices** in the two countries, as was the case in the past for many years, until 2002.

3. **Both nations had established low-level diplomatic relations** during the 1990s following Israel's interim peace accords with the Palestinians, but those ties were suspended after the outbreak of the second Palestinian uprising in 2000.

4. **Morocco became the fourth country** this year to normalise relations with Israel, after the **United Arab Emirates (UAE)**, **Bahrain** and **Sudan**.

5. The **first two Arab countries to recognise Israel** were **Egypt in 1979** and **Jordan in 1994**.

INDIA, UZBEKISTAN SIGN 9 PACTS

India and Uzbekistan on 11 December 2020 **signed nine agreements** to further **broadbase cooperation in several areas** and vowed to combat the threat of terrorism by "**destroying" terrorist safe-havens**, networks and funding channels. At a virtual summit, **Prime Minister Narendra Modi** and **Uzbek President Shavkat Mirziyoyev** deliberated on **expanding bilateral ties**, and agreed to step up efforts for early conclusion of a **bilateral investment treaty**.

What

1. PM said the **peace process in Afghanistan must preserve** the achievements of the past two decades.

2. Both countries agree that **the restoration of peace in Afghanistan** requires a process that itself is **led, owned and controlled by Afghanistan**.

3. Both countries **strongly condemned terrorism** and **reaffirmed determination of their countries to combat it by "destroying" safe-havens**, networks, infrastructure and funding channels, said a joint statement.

4. The **agreements signed** are aimed at **expanding cooperation in a range of areas**, including **new and renewable energy**, **digital technologies**, **cyber security** and **sharing of information**.

5. The statement said the **Indian side confirmed approval of $448 million of Line of Credit** for four development projects in Uzbekistan.

CHINA'S GECAM MISSION

China on 10 December 2020 **successfully launched two satellites** for the **detection of gravitational waves into planned orbit** from the Xichang Satellite Launch Centre in Sichuan Province. The two satellites, which compose the **Gravitational Wave High-energy Electromagnetic Counterpart All-sky Monitor (GECAM) mission**, were launched by a **Long March-11 carrier rocket** during the early hours.

What

1. The **GECAM satellites** will be **used to monitor high-energy celestial phenomena** such as **gravitational wave gamma-ray bursts**, **high-energy radiation of fast radio bursts**, **special gamma-ray bursts** and **magnetar bursts.**

2. Its aim **to study neutron stars**, **black holes** and other compact objects and their merger processes.

3. **GECAM satellites** will also **detect high-energy radiation phenomena in space**, such as **solar flares**, **Earth gamma flashes** and **Earth electron beams**, providing observation data for scientists.

4. The **GECAM project** is carried out by the Chinese Academy of Sciences.

ECONOMY

RBI TO SET UP ABPC

With a view to effectively deal with increasing circulation of banknotes, the **Reserve Bank of India (RBI)** has decided to set up an **Automated Banknote Processing Centre (ABPC)** in **Jaipur** for receipt, storage and dispatch of currency notes. The **functions of the ABPC** will also include **processing of banknotes received from currency chests (CCs)** and bank branches, and **destruction of soiled banknotes in an automated manner**, said the RBI's Request for Proposal (RFP) for engagement of consultant for comprehensive consultancy services for establishment of ABPC at Jaipur.

Why ABPC

1. **Cash remains an important mode of payment** for most Indian citizens, notwithstanding the growth in digital payments.

2. In fact, the **banknotes in circulation have been concurrently growing** with the rise in digital payments.

3. The **volume of banknotes in circulation has increased three-fold** from March 2001 to March 2019, and is expected to rise further in the years to come.

4. Besides, **supply of banknotes by the presses has increased about four times** from March 2001 to March 2019 and is expected to increase manifolds.

5. This has necessitated a relook at the present system of cash management and a need is felt to automate the handling of banknotes for **receipt, storage, retrieval, processing and destruction**, in line with the global changes, adopting modern technology.

UPDATED VGF SCHEME NOTIFIED

The **finance ministry** on 7 December 2020 notified the **updated Viability Gap Funding (VGF) scheme** which gives a push to the **social infrastructure sector in India**

along with **extending the existing scheme** to continue support to core sector infrastructure. The **new scheme, applicable with immediate effect**, allows for funding up to Rs 200 crore to be sanctioned by an **Empowered Committee (EC)** headed by the economic affairs secretary, while projects requiring over Rs 200 crore would be approved by the EC with the approval of the finance minister.

What is VGF Scheme?

1. **VGF means a grant to support projects** that are **economically justified but not financially viable**.

2. The scheme is **designed as a Plan Scheme** to be administered by the **Ministry of Finance** and amount in the budget are made on a year-to-year basis.

3. Such a grant **under VGF is provided as a capital subsidy** to **attract the private sector players** to participate in **PPP projects** that are otherwise **financially unviable**.

4. Projects may not be **commercially viable because of the long gestation period** and small revenue flows in future.

5. The **VGF scheme was launched in 2004** to support projects that come under **Public-Private Partnerships**.

SCIENCE AND TECHNOLOGY

PM-WANI APPROVED

The Union Cabinet on 9 December 2020 decided to launch a **PM- Wi-Fi Access Network Interface** to unleash a **massive WIFI network in India.** With this, public data centres will be opened across the country. There will be **no licence, fee or registration for it**, Ravi Shankar Prasad said. The Public Wi-Fi Access Network Interface will be **known as PM-WANI**.

What

1. The Union Cabinet chaired by the Prime Minister has given its approval for **the proposal of DoT for setting up of Public Wi-Fi Networks** by **Public Data Office Aggregators (PDOAs)** to provide public Wi-Fi service through **Public Data Offices (PDOs)** spread across length and breadth of the country to accelerate proliferation of Broadband Internet services through **Public Wi-Fi network** in the country.

2. The proposal **will promote growth of public Wi-Fi networks** in the country.

3. The businesses **can take services from Bharti Airtel, Reliance Jio or any such internet service provider (ISP)** and use their physical location to provide Wi-Fi to anyone who happens to be nearby.

4. The **proliferation of public Wi-Fi** will not only create employment but also **enhance disposable incomes in the hands of small and medium entrepreneurs** and **boost the GDP of the country**.

JVPC SUCCESSFULLY COMPLETES USER TRIALS

At a time when the Indian Army is **hunting for a new carbine**, a **DRDO-designed 5.56x30 mm protective carbine** has successfully undergone the final phase of user trials on 7 December 2020, meeting all the qualitative parameters. The Army has been looking for a carbine for many years. Recently, its tender was stuck at the final stage in which a **middle-Eastern weapon** was selected. The successful trial of the **Defence Research and**

Development Organisation (DRDO) carbine has paved the way for induction into the services.

What

1. This was the **last leg of trials in a series of user trials** which have been carried out in **extreme temperature conditions in summer** and **high altitudes in winter**.

2. According to the Defence Ministry, the **Joint Venture Protective Carbine (JVPC) has** successfully met the **stringent performance criteria of reliability and accuracy** in addition to quality trials conducted by the **Directorate General of Quality Assurance (DGQA)**.

3. **JVPC is a gas-operated semi-bull-pup automatic weapon** having more than **700 rpm rate of fire**.

4. The **effective range of the carbine is more than 100 m** and **weighs about 3.0 kg** with key features like high reliability, low recoil, retractable butt, **ergonomic design**, single hand firing capability, and multiple picatinny rails etc.

5. These features make it a **very potent weapon for counter-insurgency/counter-terrorism operations** by security agencies.

6. The carbine has been designed as per the **Indian Army's GSQR**, by the **Armament Research and Development Establishment (ARDE)**, a Pune based laboratory of DRDO.

7. The weapon is manufactured at a small-arms factory, **Kanpur** while the **ammunition is manufactured at an ammunition factory, Kirkee Pune**.

8. The weapon has already **passed the Ministry of Home Affairs (MHA) trials** and procurement action is initiated by the **Central Armed Police Forces (CAPFs)** and various state police organisations.

9. Defence Minister Rajnath Singh had unveiled the 5.56 x 30 mm JVPC during **DefExpo- 2020** at Lucknow.

QKD TECHNOLOGY VALIDATED

Achieving an important milestone, the **Quantum Key Distribution (QKD) technology** developed by the **Defence Research and Development Organisation (DRDO)** has **undergone trials between two laboratories in Hyderabad** where the quantum technology-based security was validated for a **range of 12 km over a fibre optic channel**. QKD is **primarily a mechanism to undertake secure communication** which utilises a **cryptographic protocol** involving various components of **quantum mechanics**.

What is QKD technology?

1. The **technology enables two communicating sides** to come up with random secret keys shared by both of them and known exclusively to them, so only they can use it to **encrypt and decrypt messages**, thus achieving highly-secure communication.

2. The **technology has been developed** by two DRDO facilities, **Centre for Artificial Intelligence and Robotics (CAIR)**, Bengaluru, and **DRDO Young Scientists' Laboratory – Quantum Technology (DYSL-QT)**, Mumbai.

3. As part of a successful trial, the **technology was tested in real life conditions** and performed well on all parameters.

4. As part of the test simulation, an **entity trying to gain access to communication** was also detected by the system.

5. DRDO scientists said that the work being done on **QKD technology at DRDO will be used to enable start-ups** and **small and medium enterprises** in the domain of quantum information technologies.

ASTEROID DUST COLLECTED BY PROBE ARRIVES ON EARTH

Six years after **Japan's Hayabusa2 mission** was launched, it returns **back to Earth on 6 December 2020** carrying **with it samples from the one-kilometre wide Ryugu asteroid** that **orbits the Sun**. The **mission is similar to NASA's OSIRIS-REX mission** that brought **back samples from asteroid Bennu** late in October. According to the **Japanese Aerospace Exploration Agency (JAXA)**, this is the first time that a probe has visited a celestial body that is **less than 100 metres in diameter**.

What is the Hayabusa2 mission?

1. The **Hayabasu2 mission was launched in December 2014** when the spacecraft was sent on a **six-year-long voyage to study the asteroid Ryugu** and collect samples that it is now bring back to the Earth.

2. The **spacecraft arrived at the asteroid in mid-2018** after which it **deployed two rovers and a small lander** onto the surface.

3. In 2019, the spacecraft fired an impactor into the asteroid's surface to create an **artificial crater with a diametre of a little more than 10 metres**, which allowed it to collect the samples.

4. As per NASA, **the asteroid is thought to be made up mostly of nickel and iron**.

5. Asteroids like Ryugu are interesting for several reasons, perhaps foremost because **they are near the Earth** and might, one day in the far future, pose an impact threat.

6. **Hayabasu2's predecessor, the Hayabusa mission** brought back samples from the **asteroid Itokawa in 2010**.

HOTSPOTS OF EXTREME WEATHER EVENTS

Over **75 per cent districts in India**, home to **more than 63.8 crore people**, are **hotspots of extreme climate events** such as **cyclones**, **floods**, **droughts**, **heat and cold waves**, according to a study released on 10 December 2020 by the **Council on Energy, Environment and Water (CEEW)**. This is the **first time** that **extreme weather event hotspots in the country** have been mapped.

What

1. The **frequency**, **intensity**, and **unpredictability of these extreme events** have risen in recent decades – while **India witnessed 250 extreme climate events in 35 years between 1970 and 2005**, it recorded 310 such weather events in only 15 years since then.

2. The **CEEW study** found that in the last 50 years, the **frequency of flood events increased almost eight times**.

3. Events associated with floods such as **landslides**, **heavy rainfall**, **hailstorms**, **thunderstorms**, and **cloudbursts** increased by over 20 times.

4. The **frequency of floods surged significantly in the last two decades**, it was found.

5. **Six of India's eight most flood-prone districts** in the last decade—**Barpeta**, **Darrang**, **Dhemaji**, **Goalpara**, **Golaghat**, **Sivasagar**—are in Assam.

NEW GENUS OF MALARIA DETECTED

A **new genus of Malaria** has been **detected in Kerala**. **Plasmodium ovale** was detected in a soldier **who came from Sudan**. **Plasmodium ovale** is generally reported **in Africa**. **Plasmodium vivax** and **falciparum** are generally spotted in Kerala.

What is Plasmodium ovale?

1. It is **termed ovale** as **about 20% of the parasitised cells are oval in shape**.

2. **P ovale malaria is endemic to tropical Western Africa**.

3. **P ovale** is relatively unusual outside of Africa and, where found, comprises **less than 1% of the isolates**.

4. It has also been **detected in the Philippines**, **Indonesia** and **Papua New Guinea**, but is still relatively rate in these areas.

NAVAL VERSION OF BRAHMOS TEST FIRED

A **naval version of the BrahMos supersonic cruise missile** was successfully test-fired by the Indian Navy **in the Bay of Bengal** on 1 December 2020 as **part of a series of trials** being carried out by the three services. **BrahMos Aerospace**, an Indio-Russian joint venture, produces the **supersonic cruise missile** that can be launched from **submarines, ships, aircraft, or from land platforms**.

What is the BrahMos missile?

1. A combination of the names of **Brahmaputra and Moskva rivers**, BrahMos missiles are designed, developed and produced by **BrahMos Aerospace**, a joint venture company **set up by Defence Research and Development Organisation (DRDO) and Mashinostroyenia of Russia.**

2. The earliest versions of the ship launched BrahMos and land-based system are in service of the Indian Navy and the **Indian Army since 2005 and 2007 respectively.**

3. **BrahMos is a two-stage missile** with **solid propellant booster as first stage** and **liquid ramjet as the second stage.**

4. The versions of the BrahMos that are being tested have an **extended range of around 400 kilometers**, as **compared to its initial range of 290 kilometers**, with more versions of higher ranges currently under development.

'CO-WIN' FOR COVID-19 VACCINATION

The **Union Health Ministry** has **developed a digital platform**, including a mobile application, for real-time monitoring of Covid-19 vaccine delivery, recording data and t**o enable people to get them registered for vaccination**. The name of the platform is **Co-WIN**, will help monitor the entire vaccination process.

What

1. **Co-WIN digital platform** includes a free downloadable mobile application which **can help record vaccine data**.

2. One can register themselves on it if they want the vaccine.

3. There are **five modules in Co-WIN app** -- **administrator module**, **registration module**, **vaccination module**, **beneficiary acknowledgement module** and **report module**.

ARTIFICIAL SUN

China successfully powered up its "**artificial sun**" **nuclear fusion reactor for the first time**, marking a **great advance in the country's nuclear power research capabilities**. The **HL-2M Tokamak reactor** is China's largest and most advanced **nuclear fusion experimental research device**, and scientists hope that the device can potentially unlock a **powerful clean energy source**. It uses a **powerful magnetic field to fuse hot plasma** and **can reach temperatures of over 150 million degrees Celsius** -- approximately **ten times hotter than the core of the sun**.

CHINA CLAIMS QUANTUM SUPREMACY

Chinese scientists claim **to have built a quantum computer** that is able to perform certain computations **nearly 100 trillion times faster than the world's most advanced supercomputer**, representing the first milestone in the country's efforts to develop the technology. The researchers have built a **quantum computer prototype** that is **able to detect up to 76 photons through Gaussian boson sampling**, a **standard simulation algorithm**. That's **exponentially faster than existing supercomputers**.

What is quantum supremacy?

1. It is **a term proposed in 2012 by John Preskill**, professor of theoretical physics at the **California Institute of Technology.**

2. It describes the point where quantum computers can do things that classical computers cannot.

3. In Google's case, researchers at the University of California, **Santa Barbara** have claimed to have developed a processor that **took 200 seconds to do a calculation that would have taken a classical computer 10,000 years.**

MISCELLANEOUS

ICAR BAGS GLOBAL AWARD FROM FAO

India's agri-research body **Indian Council of Agricultural Research (ICAR)** on 6 December 2020 said **it has bagged** the prestigious '**International King Bhumibol World Soil Day Award**' from the **United Nation's Food and Agriculture Organization (FAO)** for **raising awareness about importance of soil health** among all stakeholders. The award was **conferred to ICAR on the occasion of World Soil Day**, celebrated on 5 December 2020, through a virtual function.

What

1. India bagged the award for **ICAR's awareness initiative undertaken in December 2019**, involving participation of more than 13,000 people through a social media campaign.

2. **Princess Maha Chakri Sirindhorn of Thailand will give the award to ICAR** in an official ceremony to be held in **Bangkok in January 2021**.

3. ICAR said **it organised interactive sessions in universities**, **awareness-raising activities in schools**, exhibitions, screenings, field visits and training sessions, and reached out to **all soil stakeholders in the country** as part of its awareness

programme.

4. ICAR placed particular emphasis on youth by raising awareness about **importance of soil for food security and climate change mitigation** through quizzes, debates and on-site demonstrations.

5. **ICAR is responsible for coordination, guidance and management of agricultural research** and education in India.

THE WHO FOUNDATION

Indian-origin global health expert Anil Soni has been **appointed** as the **first Chief Executive Officer** of the **newly launched The WHO Foundation**, which **works alongside the World Health Organization** to address most pressing health challenges across the world. **Soni will assume his role as The WHO Foundation's inaugural Chief Executive Officer** on 1 January next year.

About The WHO Foundation

1. The **WHO Foundation**, an independent grant-making agency **headquartered in Geneva**, was launched in May 2020.

2. It **works alongside the World Health Organization (WHO)** and the global health community to address the **world's most pressing global health challenges**.

FIRST INDIAN INSTITUTION TO GET UNPA

HelpAge India has become the **first Indian institution** to have won the prestigious '**UN Population Award (UNPA) 2020**' in its '**institutional category**'. HelpAge India has received the award for **its efforts for the care of elderly over the past four decades**. The award was presented in a felicitation ceremony held by the **United Nations Population Fund**, India (UNFPA) on 10 December 2020.

About HelpAge India

1. **HelpAge India** has been working for '**the cause and care of disadvantaged older persons** to improve their quality of life' **since 1978**.

2. It receives this recognition for its impactful work with and for disadvantaged elderly.

3. It works in **125 districts spread across 25 states in India**.

About UNPA
1. **United Nations Population Award (UNPA)** was established by the **United Nations General Assembly in 1981.**
2. The **United Nations Population Award** recognises contributions in the **fields of population and reproductive health**.
3. The Committee for the **United Nations Population Award**, which made the selections, is chaired by **Ion Jinga**, Permanent Representative of **Romania** to the United Nations, and is composed of representatives of **nine other UN Member States**.
4. The **last time the Award came to an Indian was 28 years ago**, back in 1992, when it was awarded to **Mr. J.R.D. Tata as an individual laureate**.

4. The aim is to serve elder needs in a holistic manner, enabling them to live active, dignified and healthier lives.

5. **HelpAge has been running numerous programs** on-ground addressing elder needs, such as their **right to universal pension**, **quality healthcare**, **action against elder abuse** and several other initiatives at national, state and societal level with Central and State governments.

6. The organisation has been **advocating for elder-friendly policies** and their implementation.

FINDINGS OF FIRST SET OF NFHS-5

The first Phase of the **fifth round of National Family Health Survey (NFHS)**, **conducted in 2019-20**, was released by the **Ministry of Health and Family Welfare** on 12 December 2020, four years after the last survey (NFHS-4, 2015-16). The **NFHS-5 results of 17 states and five UTs** have been released under **Phase 1 of the survey**. The **NFHS-5 (2019-20)** was conducted in 6.1 lakh sample households to collect information on **population**, **health**, **family planning** and **nutrition-related indicators** from the 22 states and union territories. The **survey's Phase 2 covering other states** will be **released next year**, the health ministry had said.

Family planning

1. **India's population is stabilising**, as the **total fertility rate (TFR) has decreased** across majority of the states.

2. Of **17 states analysed** in the **fifth round of National Family Health Survey (NFHS)**, except for **Bihar, Manipur and Meghalaya**, all other states have a **TFR of 2.1 or less**, which implies that most states have attained **replacement level fertility**, an analysis by the **Population Foundation of India (PFI)** has said.

3. **All 17 states** have witnessed an **increase in the use of modern contraceptives of family planning**.

4. The proportion of women with unmet need for family planning, who want to stop or delay child-bearing but are not using any method of contraception, has declined in all states, **except Meghalaya and Andhra Pradesh**.

5. Except for Manipur, all states have reported an increase in users getting information on side effects of current contraceptive methods.

Concern areas

1. **Anaemia among women** remains a **major cause of concern**.

2. In all the states, **anaemia is much higher among women compared to men**.

3. Female sterilisation continues to dominate as the modern method of contraception in states like **Andhra Pradesh (98 per cent)**, **Telangana (93 per cent)**, **Kerala (88 per cent)**, **Karnataka (84 per cent)**, **Bihar (78 per cent)** and **Maharashtra (77 per cent)**.

4.   **Male engagement in family planning continues to be limited** and disappointing as seen by the low uptake of condoms and male sterilisation across states.

5.   There has been an **increase in child marriages** in Tripura (40.1 per cent from 33.1 per cent in 2015-16), Manipur (16.3 per cent from 13.7 per cent in 2015-16) and Assam (31.8 per cent from 30.8 per cent in 2015-16), while states like West Bengal (41.6 per cent) and Bihar (40.8 per cent) still have high prevalence of child marriages.

6.   States such as **Manipur, Andhra Pradesh, Himachal Pradesh and Nagaland** have also shown increase in teenage pregnancies.

Spousal violence

1.   **Over 30 per cent women suffered physical and sexual violence** by **their spouses** in **five out of 22 surveyed states and Union territories** in the country.

2.   The **five states** are **Karnataka**, **Assam**, **Mizoram**, **Telangana** and **Bihar**.

3.   A total of **seven states and UTs** out of the 22 surveyed reported an **increase in domestic violence** faced by women aged 18-49 years in NFHS-5 as compared to NFHS-4.

4.   These **seven states/UTs** include **Assam**, **Himachal Pradesh**, **Karnataka**, **Maharashtra**, **Sikkim**, **Jammu and Kashmir** and **Ladakh**.

5.   In **nine states/UTs**, there was an increase in the percentage of women aged 18-29 years who said that they faced sexual violence by the age of 18.

6.   These places are **Assam**, **Karnataka**, **Maharashtra**, **Goa**, **Meghalaya**, **Sikkim**, **West Bengal**, **Jammu and Kashmir** and **Ladakh**.

7.   **According to NFHS-4**, **31 per cent of ever-married women** had experienced **physical, sexual or emotional spousal violence**.

Hunger alarm

1.   The **proportion of stunted children has risen** in several of the 17 states and five Union territories surveyed, putting **India at risk of reversing precious gains in child nutrition** made over previous decades.

2.   Worryingly, that includes **richer states** like Kerala, Gujarat, Maharashtra, Goa and Himachal Pradesh.

3.   The **share of underweight and wasted children** has also gone up in the majority of the states.

4.   **Between 2005-6 (NFHS-3) and 2015-16 (NFHS-4)**, India had remarkable success in **reducing stunting from 48 per cent to 38.4 per cent**.

Clean fuel

1.   **Less than 45 percent of households use clean fuel** for cooking in **five states**, including **Bihar and West Bengal**, the latest National Family Health Survey (NFHS) has revealed.

2.   The **five states where less than 45 percent households use clean fuel for cooking**

are **Assam (42.1 percent)**, **Bihar (37.8 percent)**, **Meghalaya (33.7 percent)**, **Nagaland (43 percent)** and **West Bengal (40.2 percent)**.

3. Over 80 per cent of households use clean fuels in **Andhra Pradesh (83.6 percent)**, **Goa (96.5 percent)**, Mizoram (83.8 percent) and Telangana (91.8 percent).

4. **Electricity, LPG or natural gas and biogas** are considered as clean fuel in the survey.

5. The survey also showed that the **use of clean fuel increased in all the 22 surveyed states and UTs** in comparison to NFHS-4 (2015-16).

Sanitation

1. It found that over **70 percent of the populations in 16 states are** living in households that **use an improved sanitation facility**.

2. **Lakshadweep (99.8 percent)** and **Kerala (98.7 percent)** have the highest percentage of population living in households with an improved sanitation facility, while **Bihar (49.4 percent)** and **Ladakh (42.3 percent)** have the lowest, the survey said.

3. It found that almost all the surveyed households are using **iodised salt**.

4. **Over 90 percent of the population was living in households with electricity** and more than 70 percent with improved drinking water sources in the surveyed states and UTs.

India in WMR 2020

The **WHO's World Malaria Report (WMR) 2020**, which **provides estimated cases for malaria across the world** based on **mathematical projections**, indicates that **India has made considerable progress in reducing its malaria burden**, the Union health ministry said on 2 December 2020. **India is the only high endemic country** which has reported a **decline of 17.6 per cent in 2019 as compared to 2018** as far as malaria cases are concerned. The **Annual Parasitic Incidence (API)** reduced by **27.6 per cent in 2018 as compared to 2017**, and by 18.4 per cent in 2019 as compared to 2018. **India has sustained API less than one since year 2012**, the ministry said.

MHA RANKING OF POLICE STATIONS

Nongpok Sekmai police station **in Thoubal district of Manipur** has **topped the list of best performing police stations** awarded by the **Ministry of Home Affairs** this year. **AWPS-Suramangalam police station** in Salem City of **Tamil Nadu has ranked second** in the list, **followed by Kharsang police station in Changlang district of Arunachal Pradesh**. All police stations in the list, barring **one from Chhattisgarh** and **another from UP**, are located in the Northeast and south India.

IGP GLOBAL HOTSPOT OF ATMOSPHERIC NH3

The **Indo- Gangetic Plain (IGP)** is the **global hot-spot of atmospheric ammonia (NH3)** due to **intense agricultural activities and fertilizer production there**, according to researchers at The Indian Institute of Technology (IIT) Kharagpur. The study titled "**Record high levels of atmospheric ammonia over India: Spatial and temporal analyses**" has also been published in the international Elsevier journal "**Science of the Total Environment**". The study by the IIT team was conducted along with researchers from **Indian Institute Of Tropical Meteorology, Pune** and **few European researchers**. The team has also recommended **wider adoption of precision farming** along with **seasonal restrictions on the use of fertilizers**.

INTERNATIONAL DAY OF PERSONS WITH DISABILITIES

The **International Day of Persons with Disabilities** is celebrated on **3 December 2020**. It is also **celebrated as National Disability Day** and the **theme this year** is 'Building Back Better: toward a disability-inclusive, accessible and sustainable post Covid-19 World'. The **World Health Organisation** estimates that **more than one billion people** – about **15 percent of the world's population** – experience some kind of disability. This figure is indicated to rise, **given an ageing population** and increase in the majority of non-communicable diseases.

What

1. **International Day of Persons with Disabilities**, established by the **United Nations in 1992.**

2. It "**promote the rights and well-being of persons with disabilities in all spheres of society** and development, and to increase awareness of the situation of persons with disabilities in every aspect of political, social, economic and cultural life".

3. It is also a stark reminder of how far we in India need to go in meeting the needs of the disabled.

4. **About a billion people internationally live with a disability**, with **80 percent of these being residents of the developing world.**

5. In 2007, the **UN passed the Convention on the Rights of Persons with Disabilities**.

GLOBAL TEACHER PRIZE 2020

A primary school teacher from Solapur district of Maharashtra – Ranjitsinh Disale – who **redesigned textbooks for Kannada students**, has **won the Global Teacher Prize** on 3 December 2020. **Disale (32) works with the Zilla Parishad Primary School** at Paritewadi in Madha in Solapur district.

What

1. The **Global Teacher Prize is an annual award** given away by the **Varkey**

Foundation, in partnership with UNESCO, to a teacher who has made an outstanding contribution to the profession.

2. The **award carries a purse of US $1 million (Rs 7.37 crore)**. Disale has decided to share half the prize money with the nine other finalists.

3. **This is the first time in the Global Teacher Prize's six-year history** that the overall winner has shared the prize money with other finalists.

4. **Disale learned Kannada** and **redesigned all the textbooks of Grades 1 to 4** for better comprehension, along with **unique QR codes** that embedded audio poems, video lectures, stories and assignments in Kannada.

5. The central government had named Disale as **Innovative Researcher of the Year 2016**. He also won the **National Innovation Foundation's Innovator of the Year award in 2018**.