

# My Notes....

## NATIONAL

### GOVT. AMENDS MSCS ACT

More than a year after a **cooperative ministry** was formed with **Home Minister Amit Shah as its head**; the Cabinet on 12 October 2022 approved **extensive amendments** to the **Multi State Cooperative Societies Act (MSCS)**. The Act was last amended in 2002. The amendments make the **functioning of the board** of such cooperatives transparent and a **Cooperative Election Authority** can be formed to conduct free, fair and timely elections to coops.

#### The Amendments

1. Mandatorily Reserves Seats for **Women and SC/ST** in MSCS Boards
2. Provides for setting up of **Cooperative Election Authority**, Cooperative Information Officer and **Cooperative Ombudsman**
3. **Cooperative Election Authority** will be mandated to conduct free, fair, timely and transparent to the coops
4. Members can be **debarred for three years** for electoral malpractices.
5. **Empowers Centre to suspend board for non-holding of meeting** within stipulated
6. Rehabilitation Fund for Revival of Sick Coops

#### Flashback

1. **India**, at present, has **nearly 800,000 cooperative societies** of which **around 1,600 are MSCS**. They serve the interest of members in more than one state. These include some big names like IFFCO, Kribhco and Nafed.
2. The amendments will now be presented during the **Winter Session of Parliament**. Of the **1600-odd MSCS**, the majority are in **Maharashtra (570)**, followed by UP (150) and New Delhi (133).
3. **Credit cooperatives constitute the bulk of the MSCS (610)**, followed by **agriculture-oriented MSCS (244)**.

### INDIA IN GLOBAL HUNGER INDEX 2022

**India** has **ranked 107th out of 121 countries** in the **Global Hunger Index (GHI) 2022**, down from the **101st position the previous year**. Jointly published by **Concern Worldwide and Welthungerhilfe**, the GHI lists countries by '**severity**'. **Yemen has ranked in the lowest position at 121**, while the top of the list is dominated by **European nations including Croatia, Estonia and Montenegro**. Among Asian nations, **China and Kuwait** have ranked the highest.

#### What is the Global Health Index?

1. The **GHI** has been brought out almost **every year since 2000**; with this year's report being the **15th one**. A low score gets a country a higher ranking and implies a better performance.
2. The reason for mapping hunger is to ensure that the world achieves "**Zero Hunger by 2030**" — one of the **Sustainable Development Goals** laid out by the **United Nations**. It is for this reason that **GHI scores** are not calculated for certain high-income countries.
3. The Index tracks the performance of different countries on **four key parameters** because, taken together, these parameters capture multiple dimensions — such a **deficiency of micronutrients** — of hunger, thus providing a far more comprehensive measure of hunger.

### How is hunger measured?

1. **Undernourishment** (which reflects inadequate food availability): calculated by the **share of the population that is undernourished** (that is, whose caloric intake is insufficient);
2. **Child Wasting** (which reflects acute undernutrition): calculated by the **share of children under the age of five who are wasted** (that is, those who have low weight for their height);
3. **Child Stunting** (which reflects chronic undernutrition): calculated by the **share of children under the age of five who are stunted** (that is, those who have low height for their age);
4. **Child Mortality** (which reflects both inadequate nutrition and unhealthy environment): calculated by the **mortality rate of children under the age of five** (in part, a reflection of the fatal mix of inadequate nutrition).

## GRAP MEASURES ANNOUNCED

The **Commission for Air Quality Management (CAQM)** said on 5 October 2022 that measures under '**Stage-1**' of the **Graded Response Action Plan (GRAP)** will be **enforced in the NCR with immediate effect**. The order came after **Delhi's AQI deteriorated to be in the 'poor' category** on 5 October 2022. Other parts of the NCR, including Gurgaon, Noida and Greater Noida, also recorded 'poor' air quality on 5 October 2022.

### What is the Graded Response Action Plan?

1. **GRAP is a set of emergency measures** that kick in to prevent further deterioration of air quality once it reaches a certain threshold. **Stage 1 of GRAP** is activated when the **AQI is in the 'poor' category (201 to 300)**, and On 5 October 2022, for instance, the AQI in Delhi was 211.
2. The **second, third and fourth stages** will be activated three days ahead of the **AQI reaching the 'very poor' category (301 to 400), 'severe' category (401 to 450) and 'severe +' category (above 450)** respectively.
3. For this, the **CAQM is relying on air quality and meteorological forecasts** by the Indian Institute of Tropical Meteorology (IITM) and the India Meteorological Department (IMD).
4. Measures being imposed under the previous categories will continue even when the subsequent category is activated, that is, **if measures under Stage-2 are activated, measures under Stage-1 will continue** to remain in place.

## BETI PADHAO PROGRAMME REVISED

The Central government on 11 October 2022 announced the inclusion of skilling girls in **non-traditional livelihood (NTL)** alternatives in its flagship initiative, broadening the scope of the "**Beti Bachao Beti Padhao**" scheme.

1. The programme will now put more of an emphasis on getting more **girls enrolled in secondary school**, especially in **STEM (Science, Technology, Engineering, and Mathematics) fields**. Historically, women have been underrepresented in fields like technology.
2. The minister for women's and children's development emphasised the significance of coordination amongst many ministries in delivering **high-quality education** to empower females when announcing the **new inclusion** in the programme.

3. In spite of **gender preconceptions**, the government has always supported and enabled females to pursue their chosen careers, according to the minister.
4. The **Ministries of Women and Child Development, Skill Development and Entrepreneurship**, and Minority Affairs have signed a Memorandum of Understanding.
5. It places a strong emphasis on collaboration between Ministries and Departments to guarantee that teenagers finish their education, develop their skills, and enter the workforce in a variety of vocations, particularly those related to STEM.

#### Flashback

1. Coordinated and convergent efforts are needed to **ensure survival, protection and empowerment of the girl child**. Government launched the **Beti Bachao Beti Padhao (BBBP)** on 22nd January, 2015 at Panipat in Haryana.
2. It was initiated as a **tri-ministerial** effort of **Ministries of Women and Child Development, Health & Family Welfare and Human Resource Development**.
3. From 2021-22, the **Ministry of Skill Development and Entrepreneurship** and **Ministry of Minority Affairs** have also been added as partners.

## INDIA'S REQUEST FOR ACTION AGAINST PANNUN REJECTED

The **Interpol has rejected a second request by India** to issue a **Red Corner Notice** against **Gurpatwant Singh Pannun**, the Canada-based founder and legal advisor of the pro-Khalistan outfit **Sikhs for Justice (SFJ)**, whom the Union Ministry of Home Affairs has listed as a **"terrorist"** under the **Unlawful Activities (Prevention) Act (UAPA)**.

### What is the Interpol?

1. The **Interpol**, or **International Criminal Police Organization**, is an **inter-governmental organisation** comprising **195 member countries**, which helps police forces in all these countries to better coordinate their actions.
2. The organisation enables member countries to **share and access data on crimes and criminals**, and offers a range of technical and operational support.
3. The Interpol general secretariat coordinates the organisation's day-to-day activities. It is run by a **secretary general** (currently Jurgen Stock of Germany, who has been Interpol's chief executive since 2014), with its **headquarters in Lyon, France**, with a global complex for **innovation in Singapore**, and several satellite offices in different regions.

### What is a Red Notice?

1. Criminals or suspects often **flee to other countries to evade facing justice**. A **Red Corner Notice**, or **Red Notice (RN)** alerts police forces across the world about fugitives who are wanted internationally.
2. Interpol says **"Red Notices are issued for fugitives wanted either for prosecution or to serve a sentence**. A Red Notice is a request to law enforcement worldwide to locate and provisionally arrest a person pending extradition, surrender, or similar legal action."
3. **RNs contain information** that helps **identify wanted persons**, such as **their names, dates of birth, nationality**, and **physical attributes** such as the colour of their hair and eyes, as well as pictures and biometric data such as fingerprints, if they are available. **RNs also mention the crime(s)** they are wanted for.

4. **Interpol has a National Central Bureau (NCB) in each member country**, which is the central point of contact for both the general secretariat and the other NCBs around the world.
5. **Each NCB is run by police officials of that country**, and usually sits in the government ministry responsible for policing. (Home Ministry in India.)
6. **Interpol manages 19 police databases with information on crimes** and criminals (from names and fingerprints to stolen passports), accessible in real-time to countries.
7. It also offers **investigative support** such as **forensics, analysis**, and **assistance** in locating fugitives around the world, according to the Interpol website.

## SC PASSES SPLIT VERDICT ON HIJAB CASE

The **Supreme Court** 13 October 2022 delivered a **split verdict** in the **Karnataka hijab ban case**, directing the matter to be placed before the Chief Justice of India for appropriate directions. In his judgment, **Justice Dhulia** referred to the **Bijoe Emmanuel case**, saying it “**squarely covers the issue**”.

### Bijoe Emmanuel verdict

1. In **August 1986**, a Supreme Court bench of **Justices O Chinnappa Reddy** and **M M Dutt** had, in **Bijoe Emmanuel & Ors vs State Of Kerala & Ors**, granted protection to three children of the **Jehovah’s Witness sect**, who didn’t join in the singing of the national anthem at their school.
2. The court held that forcing the children to sing the anthem violated **their fundamental right** to religion.
3. The children’s father, **VJ Emmanuel**, had pleaded that for **Jehovah’s Witnesses**, only Jehovah should be worshiped.
4. Since the **national anthem was a prayer**, his children would stand up in respect when it was playing, but their faith did not allow them to sing it.
5. The court had also said that while the **Kerala High Court** in the matter had examined whether or not the **national anthem** contained any “word or thought... which could offend anyone’s religious susceptibilities”, it had “**misdirected itself**”, because “that is not the question at all”.

## INTERNATIONAL

### INDIAN WOMAN ELECTED IN RRB OF ITU

An **Indian woman** has for the **first time won a seat in a United Nations-linked technical body** with a mandate to resolve disagreements between UN members **over radio spectrum**. **Revathi Mannepalli**, an official of the **Department of Telecommunications**, won the most votes in the Asia and Australasia region to become a member of the **Radio Regulation Board (RRB)** of the **International Telecommunication Union (ITU)**.

#### More about ITU

1. **The ITU is the UN agency** looking at everything to do with **information and communication technologies**, including radio spectrum.
2. With the **world going digital** at an exponential pace and countries vying to send more satellites into space, the value of this finite resource is no lesser than gold.
3. **India** last had a **representative on the RRB** from **1998 to 2014**.
4. In the **voting held in Romania**, she was up against four other candidates from **China, Saudi Arabia, Iraq**, and **Indonesia**.



- The **RRB is divided into five regions**, namely **Region A (The Americas)**, **Region B (Western Europe)**, **Region C (Eastern Europe and Northern Asia)**, **Region D (Africa)**, and **Region E (Asia and Australasia)**.
- Each region** is allotted a **specific number of seats** and **Region E, of which India is a part**, has three seats. This is why Revathi had to bag enough votes to be counted among the top three candidates in Region E.

#### Why ITU, RRB are important

- Simply put, **the ITU allocates global radio spectrum and satellite orbits to countries** while it is the task of the RRB to resolve disagreements over the allocation.
- Needless to say, these spats between countries are complicated and carry enough weight to **influence geo-political equations**.

## EU'S NEW LAWS TO REGULATE CONTENT ONLINE

The **European Union (EU)** has given final approval to **online safety-focused legislation**, which is an overhaul of the **region's social media and e-commerce rules**. Called the **Digital Services Act (DSA)**, the law tightly regulates the way intermediaries, especially large platforms such as **Google, Meta, Twitter**, and **YouTube**, function in terms of moderating user content.

### What are the key features of the Digital Services Act?

- Faster removals and provisions to challenge:** As part of the overhaul, **social media companies** will have to add "**new procedures for faster removal**" of content deemed illegal or harmful.
- Bigger platforms have greater responsibility:** One of the most **crucial features** of the legislation is that it **avoids a one-size fits all approach** and places increased accountability on the Big Tech companies. Under the DSA, '**Very Large Online Platforms**' (VLOPs) and '**Very Large Online Search Engines**' (VLOSEs), that is platforms, having more than 45 million users in the EU, will have more stringent requirements.
- Direct supervision by European Commission:** More importantly, these requirements and **their enforcement** will be centrally supervised by the **European Commission itself** — a key way to ensure that companies do not sidestep the legislation at the member-state level.
- Clearer identifiers for ads and who's paying for them:** Online platforms must ensure that **users can easily identify advertisements** and understand who presents or pays for the advertisement. They must not **display personalised advertising** directed towards minors or based on sensitive personal data, according to the DSA.

## SCO-RATS DECIDE TO COUNTER THREATS

The **Regional Anti-Terrorism Structure (RATS) of the Shanghai Cooperation Organisation (SCO)** decided on joint measures by member countries to counter **threats posed by international terrorist groups** operating from Afghanistan. The decision was taken at a **meeting of the council of RATS that was hosted by India in New Delhi**.

### More about the news:

- It decides to organise a **military exercise called "Solidarity — 2023" next year**. It is learnt that the **exercise will take place in China**.
- During Solidarity-2023**, the Council of the SCO-RATS decides to organise and conduct a joint border operation with the forces.
- It also decides for **joint measures to counter the challenges** and threats posed by international terrorist organisations from the territory of Afghanistan.

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4. It also **considered the course of implementation of earlier decisions of SCO-RATS**, such as the work plans of the Executive Committee, technical experts, expert groups in the areas of border cooperation and countering the use of the Internet for terrorist, separatist and extremist purposes.
5. India **handed over chairmanship of the SCO-RATS to Kazakhstan.**

#### Flashback

1. Shanghai Cooperation Organisation (SCO) is a Eurasian political, economic and military organisation. **It begun as the Shanghai Five in 1996** by the leaders of China, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan, **it was rechristened as the SCO in 2001**. The SCO **entered into force on 19 September 2003**.
2. **The aim of SCO is to establish cooperation between member nations on Security-related concerns**, Resolving border issues, Military cooperation, Intelligence sharing, Countering terrorism, Countering American influence in Central Asia.
3. **The eight permanent members of the SCO are** China, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Uzbekistan, India and Pakistan.

## ECONOMY

### COF TOKENISATION NORM STARTED

From 1 October 2022, the **Reserve Bank of India's card-on-file (CoF) tokenisation norms** have kicked in, which aims at **improved safety and security of card transactions**. Now, for **any purchases done online** or through mobile apps, merchants, payment aggregators and payment gateways will not be able to save crucial customer credit and debit card details such as **three-digit CVV** and **expiry date**.

#### What is tokenisation?

1. **Tokenisation** refers to the **replacement of actual card details with a unique alternate code** called the '**token**', which shall be unique for a combination of card, token requester, (i.e. the entity which accepts requests from the customer for tokenisation of a card and passes it on to the card network to issue a corresponding token) and the device.
2. In September 2021, the **RBI prohibited merchants from storing customer card details** on their servers with effect from 1 January 2022, and mandated the adoption of **card-on-file (CoF) tokenisation** as an alternative.
3. **Tokenisation can be performed only by the authorised card network** and recovery of original **Primary Account Number (PAN)** should be feasible for the authorised card network only.
4. **Adequate safeguards** have to be put in place to ensure that PAN cannot be found out from the token and vice versa, by anyone except the card network. RBI has emphasised that the **integrity of the token generation process** has to be ensured at all times.

#### How will tokenisation work

1. A **debit or credit card holder** can get the **card tokenised** by initiating a request on the app provided by the token requester.
2. The token requester will forward the request to the card network which, with the consent of the card issuer, will issue a token corresponding to the **combination of the card**, the token requester, and the device.
3. In case of an **online transaction**, instead of card details, a **unique token will be stored on the server**.

## NPCI JOINS HAND TO EXPAND UPI

European payments services provider **Worldline** and **NPCI International Payments Ltd (NPIL)** have entered into a partnership in a move to expand the acceptance of Indian payment means across Europe.

### More about the news:

1. **NPCI International Payments** is the international arm of the **National Payments Corporation of India (NPCI)** — which is the driver of digital payments here in India.
2. As part of the partnership, Worldline will bring more **convenience for Indian customers** in the European markets by allowing merchants' **point-of-sale (POS)** systems to accept payments from UPI, as well as **RuPay** — NPCI's proprietary card payment network solution.
3. This is expected to result in a multitude of customer-related merchant **benefits due to an increase in footfall and spending from Indian tourists**. Currently, customers from India pay through international card networks.
4. Worldline provides us with **good coverage of the European markets** as well as an advanced and universally applicable solution.

### Flashback

1. **UPI** is the **indigenous digital payment system in India** that was conceptualised and operated by the **National Payments Corporation of India** in.
2. UPI today holds **96.5 per cent market share** in overall mobile payments and **56 per cent** (volume-wise) in **person-to-merchant** payments.
3. UPI **allows multiple bank accounts to be accessed through one single mobile application**, which in turn, merging several banking features, seamless fund routing & merchant payments into one hood that will enhance customer experience whilst opening up new business prospects for merchants.

## INDIA GETS 4TH SET OF SWISS ACCOUNT DETAILS

**India** has received the **fourth set of Swiss bank account details** of its nationals and organisations as part of an **annual information exchange**, under which Switzerland has shared particulars of nearly **34 lakh financial accounts** with 101 countries.

### Significance for India

1. This is the **fourth tranche of information** that India has received from Switzerland since the two countries entered into an **Automatic Exchange Of Information (AEOI)** agreement in January 2018. The first such exchange with India took place in 2019.
2. In an effort to bring in transparency and **restrict money laundering**, the Swiss Federal Office has given a detailed account of the massive **AEOI 2022 exchange exercise**: the country has just concluded its exchange of information with 101 countries; with details of around 3.4 million financial accounts.

### Guidelines for exchange of such banking information

1. The **guidelines and parameters for the AEOI** are set by the Paris-based international body, the **Organisation for Economic Co-operation and Development (OECD)**.
2. The annual exercise of AEOI exchange, such as the current Swiss bonanza of banking details, is strictly meant for **"tax only" purposes** and in India, kept in the custody of and for action by the **Central Board of Direct Taxes (CBDT)**.

3. Some countries which have been added to the **Swiss AEOI list for the first time** are **Turkey, Peru and Nigeria**.
4. The Swiss Federal Tax Administration office has also informed that with **74 of these 101 countries**, the information exchange was reciprocal.
5. **In 2019**, prior to India receiving its **first batch of banking information** via the AEOI that **India would be among 73 countries** that would be receiving the data and in their (India's) case "**several dispatches**" would be required, giving an indication of the large volume of account holders.

## LOGISTICS PERFORMANCE INDEX 2022

**Andhra Pradesh, Assam and Gujarat** are among the **15 states and UTs** categorised as achievers in the **logistics index chart 2022**, according to a report released by the commerce and Industry Ministry on 13 October 2022. The index is an **indicator of the efficiency of logistical services** necessary for promoting **exports and economic growth**.

### More about the report

1. **Kerala, Madhya Pradesh, Rajasthan, Puducherry, Sikkim and Tripura** are the other states categorised as fast movers in the ranking.
2. The **15 states and UTs** ranked in the **aspirers category** include Bihar, Chhattisgarh, Goa and Mizoram.
3. The report ranks the states on the **basis of their logistics ecosystem**, highlights the key logistics-related challenges faced by the stakeholders and includes **suggestive recommendations**, according to the fourth LEADS (Logistics Ease Across Different States) 2022 report unveiled by the Commerce and Industry Minister Piyush Goyal.
4. The index aims at enhancing the focus on **improving logistics performance** across states which is essential for improving the **country's trade** and **reducing transaction cost**.
5. The **first logistics report** was **released in 2018**. No ranking was released last year due to the COVID-19 pandemic. **Gujarat was at the first position** in both **2018 and 2019 ranking** lists.

## SCIENCE AND TECHNOLOGY

### 5G SERVICES LAUNCHED

Bringing a **new era in technology**, Prime Minister launched the **5G telecom services** in India on 1 October 2022. The technology seeks **to provide seamless coverage, high data rate, low latency and highly reliable communications system**. 5G services are also expected to play a major role to achieve the economic goal of making India a **\$5-trillion economy by 2024-25**.

### Ways that 5G could change your life

1. For consumers, **5G promises higher data speeds over 4G**. At its peak, internet speeds on 5G could **touch 10 Gbps**, compared to the 100 Mbps peak of 4G.
2. 5G technology offers **latency as low as 1ms**. For the unversed, latency is the time taken by the device to send packets of data and get a response; **Shorter the latency, quicker the response**.
3. 5G technology will provide **seamless coverage in remote areas across the country**. It will increase energy efficiency, spectrum efficiency and network efficiency.
4. 5G will also usher in the era of technology advances in the country such as **Virtual Reality (VR), Augmented Reality (AR)** and more. These technologies will have end-to-



end affect on multiple sectors - **healthcare, agriculture, education, disaster management** and others.

- 5G will enhance the fan experience at **live music festivals and sports events** like football matches. The **low latency** offered by 5G will offer immersive experience to sports lovers.
- 5G technology** will give a boost to the **Industrial Revolution 4.0**. The all-new 5G services will connect a variety of **IoT (Internet of Things) sensors** and devices to automate the scheduling of various processes.

#### Flashback

- In 2017, the government had set up a **high-level forum** of representatives from the **industry, academia, government,** and regulators to evaluate and approve the roadmap for **rolling out 5G**.
- It was to prevent the **lack of homogeneity in telecom networks,** witnessed in services up to 4G.

### 'PRACHAND' INDUCTED INTO IAF

The first batch of indigenously-developed **Light Combat Helicopter (LCH)** named "**Prachand**" was inducted into the **Indian Air Force (IAF)** at the Jodhpur air base on 3 October 2022. The indigenous **Light Combat Helicopter (LCH)** capable of **destroying enemy air defence,** conducting **counter insurgency strikes** and much more.

#### Features, significance of the LCH

- LCH has the **maximum take-off weight of 5.8 tonnes,** maximum speed of **268 kilometers per hour,** range of 550 kilometers, endurance of over three hours and service ceiling — the **maximum density altitude** to which it can fly — of **6.5 kilometres.**
- The helicopter uses **radar-absorbing material** to lower radar signature and has a significantly **crash-proof structure** and landing gear.
- A **pressurised cabin** offers protection from **nuclear, biological and chemical (NBC)** contingencies.
- The **helicopter** is equipped with a **countermeasure dispensing system** that protects it from **enemy radars** or **infrared seekers of the enemy missiles.**
- As far as weapons systems are concerned, a **20 mm turret gun, 70 mm rockets** and **air-to-air missile systems** are onboard.
- LCH** is powered by two **French-origin Shakti engines** manufactured by the HAL. With these features, the LCH has the capabilities of combat roles such as **destruction of enemy air defence, counter insurgency warfare, combat search and rescue, anti-tank,** and **counter surface force operations.**
- The LCH is the only attack helicopter in the world** which can **land and take off at an altitude of 5,000 meters** with a considerable load of weapons and fuel, meeting the specific requirements laid out by the Indian Armed Forces.

#### The development of LCH

- LCH inherits many features of the ALH,** it mainly differs in tandem cockpit configuration, making it sleeker. It also has many more state-of-art systems that make it a dedicated attack helicopter.
- In the **LCH's journey** towards clearance and induction by **the IAF and the Army,** extensive flight testing has been carried out on **four prototypes,** also known as **Technology Demonstrators (TDs).**
- The **first Technology Demonstrator** was completed in **February 2010** and took its first flight on 29 March the same year.
- TD-2 prototype,** completed around 2012, successfully passed the cold weather trials at high altitude. **TD-3 and TD-4 prototypes,** completed **around 2014 and 2015,** successfully tested other flight test requirements.

## SLBM LAUNCH BY INS ARIHANT

The **Ministry of Defence (MoD)** announced on 14 October 2022 that the **indigenous ballistic missile nuclear submarine INS Arihant** had successfully launched a nuclear capable **Submarine Launched Ballistic Missile (SLBM)** in the Bay of Bengal with “very high accuracy”.

### About the Submarine

1. **Launched in 2009** and Commissioned in 2016, **INS Arihant** is **India’s first indigenous nuclear powered ballistic missile** capable submarine built under the **secretive Advanced Technology Vessel (ATV) project**, which was initiated in the 1990s.
2. INS Arihant and its class of submarines are **classified as ‘SSBN’**, which is the hull classification symbol for nuclear powered ballistic missile carrying submarines.
3. The operations of the SLBMs from the SSBN are under the purview of **India’s Strategic Forces Command**, which is part of **India’s Nuclear Command Authority**.
4. In **November 2019**, after **INS Arihant completed its first deterrence patrol**, the government announced the establishment of India’s “**survivable nuclear triad**” — the capability of launching **nuclear strikes from land, air and sea platforms**.
5. In addition, **India operates 15 conventional diesel electric submarines** (classified as SSK), and some more are on the way.

### About the Missile

1. The **Submarine Launched Ballistic Missiles (SLBMs)**, sometimes called the **‘K’ family of missiles**, have been indigenously developed by Defence Research and Development Organisation (DRDO).
2. The family is **codenamed after Dr APJ Abdul Kalam**, the centre figure in India’s missile and space programmes who also served as the **11th President of India**.

## MARS ORBITER CRAFT NON-RECOVERABLE

The **Indian Space Research Organisation** confirmed on 3 October 2022 that the **Mars Orbiter craft** has **lost communication with ground station**, it’s **non-recoverable** and the **Mangalyaan mission** has attained end-of-life. The ISRO gave an update on the **Mars Orbiter Mission** and the national meet held on 27 September 2022 to commemorate the MOM, on the event of completion of its **eight years in the Martian orbit**.

### What

1. It was discussed that despite being designed for a **life-span of six months** as a technology demonstrator, the **MOM has lived for about eight years in the Martian orbit** with a gamut of significant scientific results on Mars as well as on the **Solar corona**, before losing communication with the ground station, as a result of a long eclipse in April 2022, the national space agency said.
2. During the national meet, ISRO deliberated that the **propellant must have been exhausted**, and therefore, the “**desired altitude pointing**” could not be achieved for sustained power generation.

### Flashback

1. **MOM** was launched on 5 November 2013, and after **completing 300 days of interplanetary journey**, it was **inserted to the Martian orbit** on 24 September 2014.
2. Equipped with a **five scientific payloads onboard**, during these **eight years**, the mission has gifted **significant scientific understanding on the Martian surface features, morphology**, as well as the **Martian atmosphere and exosphere**.

3. It was declared that the **spacecraft is non-recoverable**, and attained its end-of-life”, an ISRO statement said.
4. The mission will be ever-regarded as a **remarkable technological and scientific feat** in the history of planetary exploration.

## CHANDRAYAAN-2 MAPS ABUNDANCE OF SODIUM FOR FIRST TIME

The **X-ray spectrometer 'CLASS (Chandrayaan-2 Large Area Soft X-ray Spectrometer)** on the **Chandrayaan-2 orbiter** has mapped an **abundance of sodium on the moon for the first time**, according to the Indian Space Research Organisation (ISRO). **Chandrayaan-1 X-ray Fluorescence Spectrometer (C1XS)** detected **sodium from its characteristic line in X-rays** which opened up the possibility of mapping the amount of sodium on the moon.

### About the study

1. **CLASS** was built at the **U R Rao Satellite Centre of ISRO** in Bengaluru, CLASS provides **clean signatures of the sodium** line thanks to its high sensitivity and performance.
2. The study finds that a part of the signal could be arising from a **thin veneer of sodium atoms weakly bound to the lunar grains**.
3. These **sodium atoms** can be **nudged out of the surface by solar wind or ultraviolet radiation** more easily than if they were part of the lunar minerals. Also shown is a **diurnal variation of the surface sodium** that would explain the continuous supply of atoms to the **exosphere**, sustaining it.
4. An **interesting aspect** that widens the interest in this **alkali element** is its presence in the **wispy atmosphere of the moon**, a region so thin that the atoms there rarely meet.
5. This region termed an '**exosphere**', begins at the **surface of the moon and extends several thousand kilometres** merging into the **interplanetary space**.
6. The new findings from Chandrayaan-2 provide an avenue to study **surface-exosphere interaction on the moon** which would aid the development of similar models for **mercury** and other airless bodies in our solar system and beyond.

## CHINA LAUNCHES FIRST SOLAR OBSERVATORY

**China** launched the **Advanced Space-based Solar Observatory (ASO-S)**, nicknamed **Kuafu-1** in Chinese on 9 October 2022. Since then, **ASO-S**, which represents the country's ambitions to **unravel the mysteries of the Sun**, has entered its planned orbit.

### More about ASO-S

1. The **trio of instruments on board** will provide insights into **how the Sun's magnetic field causes coronal mass ejections (CMEs)** and other eruptions.
2. Scientists in China have reportedly been waiting a long time for such an observatory. Such a mission was **first pitched in the 1970s**.
3. The instruments on board the observatory include a **magnetograph to study the Sun's magnetic field**, an **X-ray imager for studying the high-energy radiations** released by electrons accelerated in solar flares and a **coronagraph which will look at the Sun in the ultraviolet visible range**, in order to observe the plasma produced by solar flares and CMEs.
4. Scientists understand that the **Sun's magnetic field** is what causes the eruptions but understanding the exact nature of the relationship between the both has proven difficult so far.
5. **ASO-S** has instruments that **look across different wavelengths at once**, which should make it easier to understand the connections.

6. **ASO-S** will conduct simultaneous observations of **both solar flares and CMEs** to “**understand their connections and formation mechanisms.**”
7. **ASO-S** has the **unique ability to study the middle corona**, an important region of the sun where solar storms brew. This has never been seen before in its entirety in the **ultraviolet spectrum.**

## MISCELLANEOUS

### INDORE DECLARED CLEANEST CITY IN 2022

**Indore** emerged as the **cleanest city of India** for the **6th time** in a row while **Surat has scored a hat-trick** as the **second cleanest city since 2020**. Navi Mumbai is the third cleanest city while **NDMC**, which houses the **county's most powerful people**, has **slipped to 9th position in 2022** from being the fifth cleanest city last year and 8th in 2020.

#### What

1. President **Droupadi Muru** released the ranking of **urban local bodies (ULBs) on cleanliness parameters for 2022** on 1 October 2022.
2. The **ranking of ULBs** has been done under **two categories -- more than one lakh and less than one lakh.**
3. Among **ULBs** that have **less than one lakh population**, four of the top five cleanest cities are from **Maharashtra**, which is **almost similar to the trend of 2022.**
4. **Panchgani in Maharashtra** is the cleanest among these cities, followed by Patan in Chhattisgarh and Karhad in Maharashtra.
5. The 2022 survey **covered 4,354 ULBs**, including **62 Cantonment Boards** and **91 Ganga Towns** in the country.
6. For the first time, the “**citizen report card**” was introduced for the survey, which was aimed **to disseminate the information** regarding the **status of cleanliness** in the city to the citizens.
7. This covered different aspects such as **segregated door to door waste collection**, cleanliness of roads and public toilets, **city beautification**, **cleanliness of market areas**, **residential areas**, drains and water bodies, daily sweeping in residential areas, non-availability of open garbage dumps and citizen grievance redressal mechanism.

#### Flashback

1. The **first edition of Swachh Survekshan in 2016** covered **only 73 ULBs**. Barring 126 ULBs from West Bengal all other local bodies participated in the survey.
2. The **main aim of Swachh Survekshan** is to examine the cities for their **levels of cleanliness** and **active implementation of Swachhata mission initiatives** in a timely and innovative manner.
3. In this survey, cities were assessed under **various parameters** in **three phases** throughout the year.
4. The assessment had **three components -- Service Level Progress, Citizen Voice and Certifications.**

### NOBEL PRIZE FOR MEDICINE

**Scientist Svante Paabo** won the **2022 Nobel Prize in Physiology or Medicine** for his discoveries “**concerning the genomes of extinct hominins and human evolution**”, the award-giving body said on 3 October 2022. The prize, arguably among the most prestigious in the scientific world, is awarded by the **Nobel Assembly of Sweden's Karolinska Institute** and is worth 10 million Swedish crowns (\$900,357).

#### What has the Medicine Nobel been awarded for?

1. This year, the focus of the committee seems to have been on **human evolution** and the role that it has played in **shaping our health and biological systems** over time.

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2. **Svante Pääbo's "seminal" discoveries** "provide the basis for exploring what makes us uniquely human", said the assembly.
3. **Hominins** refer to the **now-extinct species of apes** that are **believed to be related to modern humans**, as well as modern humans themselves.
4. Pääbo also found that **gene transfer had occurred from these now extinct hominins to Homo sapiens** following the migration out of Africa around 70,000 years ago.
5. This ancient flow of genes to present-day humans has physiological relevance today, for example affecting **how our immune system reacts to infections**.

#### Flashback

1. It was created in the **will of Swedish dynamite inventor** and wealthy businessman **Alfred Nobel**.
2. The prizes for achievements in **science, literature and peace** have been awarded **since 1901**, though the economics prize is a later addition.

## NOBEL PRIZE FOR PHYSICS 2022

The **Nobel Prize for Physics 2022** is being shared by **three scientists, Alain Aspect, John F Clauser** and **Anton Zeilinger**, for their work on **quantum mechanics**. The award was announced Royal Swedish Academy of Sciences on 4 October 2022 at the **Karolinska Institute** in Stockholm.

### What the scientists worked on

1. The **three conducted a series of experiments** on something called **entangled quantum states**, where **two separate particles behave like a single unit**.
2. Their **pathbreaking results** will have implications in the fields of **quantum computers, quantum networks** and **secure quantum encrypted communication**. Put simply, quantum computers use **quantum mechanics** to solve problems too complex for regular computers.
3. For a long time, scientists have examined if the **correlation in entangled particles** was because they "**contained hidden variables**, instructions that tell them which result they should give in an experiment".
4. **In the 1960s, John Stewart Bell** developed the **mathematical inequality that is named after him**.
5. This states that if there are hidden variables, the correlation between the results of a large number of measurements will never exceed a certain value.
6. However, **quantum mechanics** predicts that a **certain type of experiment** will **violate Bell's inequality**, thus resulting in a stronger correlation than would otherwise be possible.
7. **Clauser worked on Bell's ideas** and his measurements supported **quantum mechanics** by **violating a Bell inequality**. His experiment had some loopholes, which were closed by Aspect.
8. Zeilinger, according to the Nobel Prize website, "started to use **entangled quantum states**. Among other things, his research group has demonstrated a phenomenon called **quantum teleportation**, which makes it possible to move a quantum state from one particle to one at a distance."

## NOBEL PRIZE 2022 IN CHEMISTRY

This year's Nobel Prize in chemistry **has been awarded in equal parts to Carolyn R. Bertozzi, Morten Meldal and K. Barry Sharpless for their work in 'click chemistry', which**

has applications in the field of medical science, including the treatment of cancer. K Barry Sharpless winning the second Nobel of his career.

#### What the scientist worked on:

1. **Barry Sharpless and Morten Meldal** brought chemistry into the era of functionalism and laid the foundations of **click chemistry**.
2. **Carolyn Bertozzi**, who took click chemistry to a new dimension and began using it to map cells. Her **bioorthogonal reactions** are now contributing to more targeted cancer treatments, among many other applications.
3. Sharpless came up with the term '**click chemistry**' and worked extensively on it.
4. Meldal, came up with a special chemical structure called '**triazole**' which has many significant applications
5. Bertozzi took the next step of developing click reactions that could work inside living organisms, '**bioorthogonal**' reactions (a term she coined), take place living systems without interfering with native biochemical processes.

#### What are click chemistry and its function?

1. **Click chemistry** and **bioorthogonal reactions** -- which take place **without disrupting the normal functioning of the cell** -- have taken chemistry into the era of functionalism, bringing the greatest benefit to humankind.
2. Chemists have long been driven by the desire to build increasingly **complicated molecules**.
3. In **pharmaceutical research**, this has often involved **artificially recreating natural molecules** with **medicinal properties**.
4. This has led to many admirable molecular constructions, but these are generally time consuming and very expensive to produce.

## NOBEL PRIZE IN LITERATURE 2022

The **Nobel Prize for Literature 2022** has gone to French author **Annie Ernaux**, for, according to the Swedish Academy, "**the courage and clinical acuity** with which she uncovers the roots, estrangements and **collective restraints of personal memory**".

#### More about her work

1. **Ernaux, 82**, has seen a **sharp increase in popularity** in the English-speaking world since 2019, after her seminal work '**The Years**', translated by **Alison L Strayer**, was shortlisted for the **Man Booker international prize**.
2. Her book on **her illegal abortion** in the 1960s, '**Happening**' (first published in 2001) has also been in the limelight after **abortion rights** were curtailed in the US.
3. **Ernaux, née Duchesne**, was born in **Lillebonne Normandy in 1940**. Her parents moved to Yvetot a few years later, where they ran a **grocery and cafe**.
4. Her '**A Girl's Story**' (**published in French in 2016**), built on her own experiences at a children's camp, deals with the shaming an 18-year-old girl is subjected to for her sexuality.

## NOBEL PEACE PRIZE 2022

**Memorial, Russia's most prominent and oldest human rights organisation**, was one of the **three recipients** that received this year's **Nobel Peace Prize** on 7 October 2022. The other winners are **Belarusian human rights advocate Ales Bialiatski** and Ukrainian human rights organisation **Center for Civil Liberties**.

### About Memorial International

1. **Established in 1987**, Memorial sought to ensure that the victims of state-led oppression during the **rule of the USSR** would never be forgotten.
2. After the collapse of the Soviet Union, it became **Russia's largest human rights organisation**, compiling information not only about the victims of the past, but also becoming the foremost source of information of political prisoners in Russian detention centres.
3. It has **opposed combat militarism, promoted human rights** and played a crucial role in collecting information about war crimes committed by Russian forces and their supporters during **Chechen Wars** from the 1990's to the 2000's.
4. **One of the founders** of the memorial is the **1975 Nobel peace prize winner Andrei Sakharov** father of the **Soviet Hydrogen bomb**, who later became an opponent of nuclear tests.

### About Ales Bialiatski

1. **Ales Bialiatski** was one of the initiators of the **democracy movement** that emerged in Belarus in the mid-1980s.
2. He has devoted his life to **promoting democracy** and peaceful development in his home country.

### About Center for Civil Liberties

1. The **Center for Civil Liberties** was **founded in Kyiv in 2007** for the purpose of **advancing human rights and democracy in Ukraine**.
2. The center has taken a stand to **strengthen Ukrainian civil society** and pressure the authorities to make Ukraine a full-fledged democracy.
3. After **Russia's invasion of Ukraine in February 2022**, Center for Civil Liberties has engaged in efforts to identify and document Russian war crimes against the Ukrainian civilian population.

## NOBEL PRIZE 2022 IN ECONOMICS

**Ben S Bernanke, Douglas W Diamond and Philip H Dybvig** have won the **2022 Nobel prize for economics** on 10 October 2022 **for research on banks and financial crises**. The prizes carry a cash award of 10 million Swedish kronor (nearly \$900,000) and will be handed out on 10 December 2022.

### What

1. The work for which **Bernanke, Diamond and Dybvig** are being recognised has been crucial to subsequent research that has **enhanced our understanding of banks, bank regulation**, banking crises and how financial crises should be managed.
2. The research presented by this year's laureates in economic sciences **reduces the risk of financial crises** developing into **long-term depressions** with severe consequences for society, which is of the greatest benefit to us all.
3. Unlike the other prizes, the economics award **wasn't established in Alfred Nobel's will of 1895** but by the Swedish central bank in his memory. The **first winner was selected in 1969**.

### Flashback

1. Last year, half of the award went to **David Card** for his research on **how the minimum wage, immigration and education affect the labor market**.
2. The other half was shared by **Joshua Angrist and Guido Imbens** for proposing how to study issues that don't easily fit traditional scientific methods.

**FACT TO REMEMBER:**

1. GOVT. AMENDS MSCS ACT
2. INDIA IN GLOBAL HUNGER INDEX 2022
3. BETI PADHAO PROGRAMME REVISED
4. SC PASSES SPLIT VERDICT ON HIJAB CASE
5. 'PRACHAND' INDUCTED INTO IAF
6. CHINA LAUNCHES FIRST SOLAR OBSERVATORY
7. NOBEL PRIZE FOR MEDICINE
8. NOBEL PRIZE FOR PHYSICS 2022
9. NOBEL PRIZE 2022 IN CHEMISTRY
10. NOBEL PRIZE 2022 IN ECONOMICS

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