

My Notes....

NATIONAL

'UNITY MALL' IN EVERY STATE CAPITAL

Finance Minister Nirmala Sitharaman announced in the Budget that states would be encouraged to set up a “Unity Mall” in their capitals, **their most prominent tourism centres, or their financial capitals.**

What is a unity mall?

1. The **FM did not specify** what the “unity mall” would be, **its physical or non-physical structure, or how it would work.**
2. However, she said that **the unity malls would focus on the promotion and sale of the state’s own “ODOPs (one district, one product), GI products and other handicraft products,** and for providing space for such products of all other States”.
3. At present, **an Ekta Mall** is operational near the **Statue of Unity**, located about 3.5 km away from the statue at Ekta Nagar in Kevadia.
4. The **Ekta Mall – Unity in Handicrafts Diversity** is a showroom of handicrafts from different states of India.
5. **Spread over 35000 square-feet area** of two floors, the **mall has 20 emporiums** dedicated to states’ traditional textiles and artisanal handicrafts.

What is ODOP?

1. **One District, One Product** is an initiative by the government which aims **to make regional products more accessible**, while providing capital to those who produce them.
2. Under the scheme, the **State identifies the chief product for a district**, and then offers support for its processing, storage and marketing.
3. These products can be **perishable agri produce, cereal-based products** or food products like mango, potato, meat and fisheries.
4. The scheme also supports traditional and innovative products including **waste-to-wealth products**, such as honey and herbal edible products.

What is GI?

1. A **geographical Indication (GI) tag** is given to **agricultural, natural or manufactured products** that originate from a **specific geographical area** due to which they possess **unique characteristics and qualities**, according to the **Agricultural and Processed Food Products Export Development Authority (APEDA).**
2. Essentially, the tag guarantees that the product is coming from that specific area. **It’s kind of a trademark** in the international market.

DRAFT GEO-HERITAGE SITES AND GEO-RELICS BILL

The draft **Geo-heritage Sites and Geo-relics (Preservation and Maintenance) Bill**, as **notified by the Ministry of Mines is aimed at** providing for the declaration, preservation, protection and maintenance of **geo-heritage sites and geo-relics of national importance**, for geological studies, education, research and awareness purposes.

What are the Geo-heritage Sites and Geo-relics means?

1. According to a **2016 press release by the Ministry of Mines**, the Geological Survey of India (**GSI**) **declares** geo-heritage sites/ national geological monuments for protection and maintenance.
2. The **GSI or the respective state governments** take necessary **measures** to protect these sites.
3. The **GSI, under the Ministry of Mines** was **established in 1851** to investigate and assess coal and other mineral resources of the country through regional-level exploration.

4. The **draft bill defines** Geo-heritage sites as “sites containing geo-relics and phenomena, stratigraphic type sections, geological structures and geomorphic landforms including caves, natural rock-sculptures of national and international interest.
5. It **also includes such portion** of land adjoining the site,” that may be required for **their conservation** or to access to such sites.
6. A **Geo-relic is defined as** “any relic or material of a geological significance or interest like sediments, rocks, minerals, meteorite or fossils”.
7. The **GSI will have the power** to acquire geo-relics “for its preservation and maintenance”.
8. The **32 geo-heritage sites spread across 13 states** include the volcanogenic bedded Barytes of Mangampeta in Cuddapah district of Andhra Pradesh, the Akal Fossil Wood Park in Jaisalmer, Rajasthan and others.

What does the Geo-heritage Sites and Geo-relics Bill say?

1. Due to the **absence of any legislation in the country** for the protection, preservation and maintenance of the geo-heritage sites, these **are increasingly threatened** with destruction not only by the natural causes of decay **but also by population pressure and changing social and economic conditions** which is aggravating the situation.
2. It **states that the fossil wealth of dinosaur remains** of Madhya Pradesh and Gujarat, marine fossils of Kutch and Spiti oldest life forms stromatolites of Rajasthan and Madhya Pradesh **are of great geo-heritage and geo-tourism value.**
3. The **world’s oldest metallurgical records** of gold, lead and zinc in Rajasthan and Andhra Pradesh are **still preserved** but are under great threat.

MEASURES TRIBAL WELFARE IN BUDGET 2023

In her **Union Budget 2023 speech** on 1 February 2023, Finance Minister Nirmala Sitharaman announced **some targeted schemes for tribal welfare**, ranging from better education **to clean drinking water to sanitation**. Here is a look at the various announcements.

Facilities for Eklavya Schools

1. In the next three years, the Centre will recruit 38,800 teachers and support staff for the **740 Eklavya Model Residential Schools**, serving 3.5 lakh tribal students.
2. **Eklavya Model Residential Schools (EMRS) were set up in 1997-98** to impart quality education to **ST children in remote areas**.
3. Each school has a **capacity of 480 students**, catering to students from Class VI to XII.
4. In addition, wherever the density of ST population “is higher in identified Sub-Districts (90% or more), it is proposed to set up **Eklavya Model Day Boarding School (EMDBS)** on an experimental basis for providing additional scope for ST Students seeking to avail school education without residential facility.

Eliminating Sickle Cell Anaemia

1. **A Mission to eliminate Sickle Cell Anaemia by 2047** will be launched. It will entail awareness creation, **universal**

Focus on PVTGs

1. **To improve socio-economic conditions** of the **particularly vulnerable tribal groups (PVTGs)**, **Pradhan Mantri PVTG Development Mission** will be launched.
2. This will **saturate PVTG families and habitations** with basic facilities such as safe housing, **clean drinking water and sanitation**, improved access to education, health and nutrition, road and telecom connectivity, and sustainable livelihood opportunities.”
3. **An amount of Rs 15,000 crore** will be made available to implement the Mission in the next three years under the **Development Action Plan for the Scheduled Tribes**.

- screening of 7 crore people** in the age group of **0-40 years** in affected tribal areas, and counselling through collaborative efforts of central ministries and state governments.
- Sickle Cell Anaemia is a genetic condition** that causes **Red Blood Cells** to deform and break down.
 - Sickle Cell Disease (SCD)** is widespread among the tribal population in India where about 1 in 86 births among STs have SCD.

PRIMARY AGRICULTURAL CREDIT SOCIETIES

The Union Budget has announced for computerisation of 63,000 **Primary Agricultural Credit Societies (PACS)** over the next five years, with the aim of **bringing greater transparency and accountability** in their operations and enabling them to **diversify their business** and undertake more activities.

What are PACS?

- PACS are village level cooperative credit societies** that serve as the **last link in a three-tier cooperative credit structure** headed by the **State Cooperative Banks (SCB)** at the state level.
- Credit from the SCBs** is transferred to the district central cooperative banks, or DCCBs, that operate at the district level. The DCCBs work with PACS, which deal directly with farmers.
- Since **these are cooperative bodies**, individual farmers are members of the PACS, and office-bearers are elected from within them. **A village can have multiple PACS.**
- PACS are involved in short term lending** — or what is known as **crop loan**. At the start of the cropping cycle, farmers avail credit to finance their requirement of seeds, fertilisers etc.
- Banks extend this credit at **7 per cent interest**, of which **3 per cent is subsidised by the Centre**, and **2 per cent by the state government**. Effectively, farmers avail the crop loans at **2 per cent interest only**.

MISHTI SCHEME

Building on India's success in afforestation, 'Mangrove Initiative for Shoreline Habitats & Tangible Incomes', MISHTI, will be taken up for mangrove plantation along the coastline and on salt pan lands, wherever feasible, through convergence between MGNREGS, CAMPA Fund and other sources."

Why mangroves?

- They have been the **focus of conservationists** for years and it is difficult to overstate their **importance in the global climate context**.
- These **forests consisting of trees and shrub that live in intertidal water** in coastal areas host diverse marine life.
- They also **support a rich food web**, with molluscs and algae-filled substrate **acting as a breeding ground** for small fish, mud crabs and shrimps, **thus providing a livelihood** to local artisanal fishers.
- They **act as effective carbon stores, holding up to four times the amount of carbon** as other forested ecosystems.

Mangrove Alliance for Climate (MAC):

- At the **27th session of Conference of Parties (COP27)**, this year's **UN climate summit**, the Mangrove Alliance for Climate (**MAC**) was **launched** with India as a partner.
- It **initiative led by** the United Arab Emirates (UAE) and Indonesia, the Mangrove Alliance for

Current status of mangroves:

- South Asia houses some of the most extensive** areas of mangroves globally, while **Indonesia hosts** one-fifth of the overall amount.
- India holds around 3 per cent** of South Asia's mangrove population. **Besides the Sundarbans in West Bengal**, the Andaman's region, the Kachchh and Jamnagar areas in Gujarat too have **substantial mangrove cover**.

- Climate (MAC) includes India, Sri Lanka, Australia, Japan, and Spain.
3. It **seeks to educate and spread awareness** worldwide on the **role of mangroves** in curbing global warming and its potential as a solution for climate change.
 4. The **inter-governmental alliance** works on a voluntary basis which means that there are **no real checks and balances** to hold members accountable.
 5. The **parties will decide their own** commitments and deadlines regarding planting and restoring mangroves.
 6. The members will also **share expertise and support each other** in researching, managing and protecting coastal areas.

INTERNATIONAL

LEGALITY OF THE NORTHERN IRELAND PROTOCOL

The **United Kingdom Supreme Court** on 8 February 2023 ruled that the **Northern Ireland Protocol**, which is a **post-Brexit agreement** that created a **trade border** between **Northern Ireland** and **the rest of the UK**, is **lawful**. The **apex court unanimously rejected appeals** filed by **pro-Brexit activists** and former leaders of **Northern Ireland's largest unionist parties**, who argued that the protocol breached the **1800 Act of Union and the Northern Ireland Act 1998**.

What is the Northern Ireland Protocol?

1. After Brexit, **Northern Ireland remained the UK's only constituent** that shared a **land border with an EU member**, the **Republic of Ireland**. EU and UK having different product standards, checks would be necessary before goods could move from Northern Ireland to Ireland.
2. However, **the two sides have had a long history of conflict**, with a hard-fought peace secured only in 1998 under the **Belfast Agreement**, also called the **Good Friday agreement**.
3. Fiddling with this border was thus considered too dangerous, and it was decided the checks would be conducted between Northern Ireland and Great Britain. This was called the **Northern Ireland Protocol**.
4. Under the protocol, **Northern Ireland remains in the EU single market**, and trade-and-customs inspections of goods coming from **Great Britain** take place at its ports along the **Irish Sea**.

What are the changes that the UK wants in the protocol?

1. The UK government has proposed the creation of a **'green lane'**, which would have fewer checks and customs controls **only for goods going to Northern Ireland**. Meanwhile, a more stringent **'red lane'** would be for goods going on to the Republic of Ireland and the rest of the EU.
2. The plan also includes that **changes in tax rules**, such as **spending and tax policies** for Northern Ireland be decided only by London, and a proposal that businesses in Northern Ireland be allowed to choose **between UK or EU standards**.
3. The UK also seeks "an independent body to settle disputes over the Northern Ireland Protocol, rather than the European Court of Justice."

PROPOSED CHANGE IN ANGEL TAX

A recently proposed detail has **Indian start-ups** worried. These new age firms, that offer **their shares to foreign investors**, may have to pay **'angel tax'**, which was earlier only supposed to be paid for investments raised by resident Indian investors, as per a motion made in the Finance Bill, 2023.

What exactly is the proposed change?

1. The **Finance Bill, 2023**, unveiled by Finance Minister Nirmala Sitharaman on 1 February 2023, has proposed to amend **Section 56(2) VII B of the Income Tax Act**.
2. The provision states that **when an unlisted company**, such as a **start-up**, receives **equity investment from a resident** for issue of shares that exceeds the face value of such shares, **it will be counted as income for the start-up** and be subject to income tax under the head 'Income from other Sources' for the relevant financial year.
3. However, with the latest amendment, the government has proposed to **also include foreign investors in the ambit**, meaning that **when a start-up raises funding from a foreign investor**, that **too will now be counted as income and be taxable**.
4. For instance, if the fair market value of a start-up **share is Rs 10 apiece**, and in a subsequent funding round they offer it to **an investor for Rs 20**, then the difference of Rs 10 would be taxed as income.
5. **Section 56(2) VII B of the Income Tax Act**, colloquially known as the '**angel tax**' was **first introduced in 2012** to deter the generation and **use of unaccounted money through the subscription of shares** of a closely held company at a value that is higher than the fair market value of the firm's shares.

Why are start-ups concerned?

1. The change comes as the **funding for India's startups dropped by 33 per cent** to \$24 billion in 2022 as compared to the previous year, according to a PwC India report released in January.
2. **Foreign investors are a key source of funding for the start-ups** and have played a big role in increasing the valuation.
3. For instance, **Tiger Global**, one of the most prolific foreign investors in India, has invested in over a third of the start-ups that have turned unicorn, with a valuation of at least \$1 billion.
4. This could **compel more startups to flip overseas**, as foreign investors may not want to deal with **additional tax liability** by virtue of their investment in the startup.

RBI ANNOUNCES 2ND GLOBAL HACKATHON

The Reserve Bank on 14 February 2023 announced its **second global hackathon -- 'HARBINGER 2023 - Innovation for Transformation'** with the theme '**Inclusive Digital Services**'. **Fintechs** have been invited to develop solutions that have the potential to make **digital financial services** accessible to the **differently-abled**, **facilitate efficient compliance**, extend the reach of **Central Bank Digital Currencies** and enhance the **scalability of blockchains**.

What

1. **Being part of HARBINGER 2023** gives an opportunity to the participants to get mentored by industry experts and **exhibit their innovative solutions** before an eminent jury and win exciting prizes in each category
2. **The RBI has invited innovative ideas in four segments.**
 - a) Innovative, easy-to-use, digital banking services for **differently-abled (Divyaang)**
 - b) **RegTech solutions** to facilitate more efficient compliance by Regulated Entities (REs)

Flashback

1. The **first hackathon** was announced in **November 2021** and results were declared in June 2022.
2. It had received 363 proposals submitted by teams from **within India and from 22 other countries** including the US, UK, Sweden, Singapore, Philippines, and Israel.

- c) Exploring use cases/solutions for **CBDC-Retail transactions**, including transactions in offline mode
- d) Increasing **Transactions Per Second (TPS)**/ throughput and scalability of blockchains'

ECONOMY

UNION BUDGET HIGHLIGHTS 2023-24

Union Finance Minister Nirmala Sitharaman on 1 February 2023 presented **the Union Budget 2023**, the fifth budget on 1 February 2023. In a **boost to taxpayers and economy**, Sitharaman announced **major changes in tax slabs** under new tax regime and big boost for railways and capital expenditure.

Key highlights of Budget 2023

1. **Major announcements for Income Tax payers**
2. No changes in the old tax regime
3. New tax regime to become the default tax regime
4. **No tax on income up to Rs 7 lakh a year in new tax regime**
5. Govt proposes to increase income tax rebate limit **from Rs 5 lakh to Rs 7 lakh** in new tax regime
6. Govt proposes **to reduce highest surcharge rate** from 37% to 25% in new tax regime

New slabs under new tax regimes

1. Rs 0-3 lakh : Nil
2. Rs 3-6 lakhs: 5%
3. Rs 6-9 lakhs: 10%
4. Rs 9-12 lakhs: 15%
5. Rs 12-15 lakhs: 20%
6. Rs Over 15 lakhs: 30%

Indirect Taxes

1. 16% increase in NCCD on certain cigarettes
2. **45% of tax refunds** were processed within 24 hours. The taxpayer portal received maximum of 72 lakh returns a day: Sitharaman
3. **New cooperatives** that commence manufacturing till March, 2024 to get lower tax rate of 15%
4. Basic customs duty on crude, glycerine is proposed to be reduced to 2.5%.
5. Propose to increase import duty on silver bars to align it with gold, platinum
6. **Extend customs duty cut on imports of parts of mobile phones by 1 year**
7. To promote value addition in the manufacturing of TVs, customs duty on open cells of TV panels reduced to 2.5%

MSME

1. **Revamped credit guarantee for MSMEs** to take effect from 1 Apr 2023 with infusion of Rs 9,000 crore in corpus
2. **New credit guarantee scheme for MSMEs** to reduce cost of credit by 1 percentage point

Banking

1. Govt moots amendments to **Banking Regulation Act** to improve governance in banks

Skill training

1. Government will launch **Pradhan Mantri Kaushal Vikas Yojana 4.0**
2. To skill the youth for international opportunities, **30 Skill India International Centres** will be set up across different States.

Clean Energy

1. Rs 35,000 crores priority capital for the **energy transition**
2. **Green credit programme** will be notified under the Environment Protection Act

3. Battery storage to get **viability gap funding**
4. Govt to support setting up of battery energy storage of 4,000 MWh
5. **National Green Hydrogen mission** with an outlay of Rs 19,700 crore will facilitate the transition of the economy to low carbon intensity, reduce dependence on fossil fuel imports and make the country assume technology and market leadership

Gems and Jewellery:

1. To encourage the indigenous production of **lab-grown diamonds**, a research and development grant is to be provided to one of the IITs for five years
2. Proposal to review customs duty of lab-grown diamonds to be included in Part-B of Budget document

Aviation

1. **50 additional airports**, helipods, water aero drones, advanced landing grounds will be revived to improve regional air connectivity:

Railways gets massive boost:

1. An outlay of **Rs 2.4 lakh crore** provided for railways in FY24. It's the highest ever highest ever allocation for Railways and is nearly nine times over FY14 allocations.

Ease of Doing Business:

1. Govt to bring another dispute resolution scheme **Vivad Se Vishwas-2** to settle commercial disputes
2. **PAN as common identifier for all digital systems of govt agencies**
3. One stop solution for reconciliation and updating identity maintained by various agencies to be established using **digi locker and Aadhaar** as foundational identity
4. **Central Processing Centre** to be set up for faster response to companies filing forms under Companies Act
5. For business establishments required to have Permanent Account Number, the PAN will be used as a common identifier for **all Digital Systems of specified government agencies**.
6. **More than 39,000 compliances** have been reduced and over 3,400 legal provisions decriminalised to enhancing ease of doing business
7. Finance Minister announces multiple measures to enhance business activity in **GIFT City**

Urban Development

1. Govt to spend Rs 10,000 crore per year for **urban infra development fund**
2. Cities to be incentivised to improve **creditworthiness for municipal bonds**
3. Aim for **100% mechanical desludging of septic tanks and sewers** in all cities and towns

Housing:

1. Outlay for **PM Awaas Yojana enhanced 66%** to over Rs 79,000 crore
2. Capex hiked 33%
3. Capital Expenditure increased 33 percent to Rs 10 lakh crore, which would be 3.3% of GDP, says FM
4. Effective capital expenditure of centre to be - Rs 13.7 lakh crore
5. Capital investment outlay to be 3.3% of GDP in FY24
6. Effective capital expenditure of Centre at Rs 13.7 lakh in FY24
7. Interest-free loan to states to continue

Digital Library for Children, Adolescents Will Be Set Up:

1. **National Digital library** will be set up for children and adolescents
2. **National Book Trust**, Children's Book Trust to replenish non-curricular titles in regional languages, English to digital libraries
3. States to be encouraged to set up physical libraries for them at panchayat and ward levels and provide infrastructure for accessing the **National Digital Library resources**

Education:

1. **Three centres of excellence for artificial intelligence** to be set up in top educational institutions.
2. 157 new nursing colleges will be established in colocation with the existing 157 medical colleges established since 2014.
3. **Eklavya Model Residential Schools** to be set up in the next 3 years. The Centre will recruit 38,800 teachers and support staff for 740 schools serving 3.5 lakh tribal students

Agriculture:

1. **An Agriculture Accelerator Fund** will be set up to encourage agri-startups by young entrepreneurs
2. **Digital public infrastructure** to be developed for the agriculture sector
3. **The agricultural credit target** will be increased to Rs 20 lakh crores with a focus on animal husbandry, dairy and fisheries
4. Over the next 3 years, one crore farmers will get assistance to adopt **natural farming**.
5. **10,000 bio input resource centres** will be set up
6. Fisheries: To launch sub-scheme under **PM Mastya Sampada Yojna** with outlay of Rs 6,000 crore to further enable activities of fishermen
7. **Indian Institute of Millet Research** will be supported as a centre of excellence
8. Have initiated **computerisation for 63,000 primary agricultural credit societies** with an investment of Rs 2,516 crore

Tribal Welfare:

1. **Pradhan Mantri Primitive Vulnerable Tribal Group (PMPVTGS) mission** is been launched to improve socio-economic condition on PMPVTGS
2. To improve social-economic condition of the Particularly Tribal Groups, **PMPBTG Development mission** will be launched, to saturate PBTG habitations with basic facilities. Rs 15,000 cr to be made available to implement scheme in next 3 years

Budget follows seven priorities:

1. Inclusive development.
2. Reaching the last mile.
3. Infrastructure and investment.
4. Unleashing the potential.
5. Green growth.
6. Youth power.
7. Financial sector.

Aims of Budget 2023 to include:

1. Facilitating ample opportunities for citizens, especially youth
2. Providing strong impetus to growth and job creation
3. **Strengthening macro-economic stability**
4. To aim for the empowerment of women in Budget 2023
5. **To enable women self-help groups** to reach next stage of economic empowerment
6. To help self-help groups with raw material supply, branding, marketing of products

Tourism:

1. **Promotion of tourism** will be taken up on mission mode with active participation of states, the convergence of Govt programs & public-private partnerships.
2. **50 tourist destinations** will be selected through challenge mode to be developed as a whole package for domestic and international tourism
3. States will be encouraged to set a **'Unity Mall' in State capital** or the most popular tourist destination in the state for the promotion and sale of 'One District, One product' and **GI products and other handicraft**
4. The country offers **immense attraction for domestic as well as foreign tourists**. There is a large potential to be tapped in tourism. The sector holds huge opportunities for jobs and entrepreneurship for youth in particular.

SCIENCE AND TECHNOLOGY

ISRO'S FIRST LAUNCH OF 2023

In its **second development flight** on 10 February 2023 morning, the **Small Satellite Launch Vehicle (SSLV-D2)** was launched successfully from the **first launch pad** at the **Satish Dhawan Space Centre SHAR, Sriharikota, Andhra Pradesh**. It will place the Indian Space Research Organisation (ISRO) **earth observation satellite EOS-07** and **two co-passenger satellites** — **Janus-1** and **AzaadiSat2** — developed by start-ups, in a **450-km circular orbit** around the Earth.

What's the aim of the launch?

1. The **new vehicle** was developed to **capture the emerging small and micro satellite commercial market**, with launches **offered on demand**.
2. The rocket can be assembled by a small team in only a few days, compared to the **six months and around 600 people** it takes for ISRO's workhorse PSLV.
3. The **launch vehicle uses three solid stages** followed by a **liquid-fuel-based Velocity Trimming Module (VTM)** to place satellites in orbit.
4. The vehicle's first development flight that took place **last August** after repeated delays due to the pandemic, **failed to place the satellites in precise orbit**.

What is Janus-1?

1. **Janus-1 is a technology demonstrator satellite** built by United States-based **Antaris** and its Indian partners **XDLinks** and **Ananth Technologies**.
2. **Janus-1**, which **weighs only 10.2 kg**, is a **six-unit cube satellite** with five payloads on board — two from Singapore, and one each from Kenya, Australia, and Indonesia.
3. **The entire satellite was built in 10 months**, less than half the time it usually takes to manufacture satellites of this size, according to Gandupalli.

What is AzaadiSat2?

1. The **payloads have been built by 750 girl students from across India**. A similar satellite by **SpaceKidzIndia** was launched aboard **SSLV-D1 in August last year**.
2. The payloads remain the same — **LoRa amateur radio**, a sensor to measure radiation levels in space, and **sensors to measure the health of the satellite** such as temperature, reset count, and inertial data — but this second satellite has an **additional feature**.
3. **SpaceKidzIndia** — which aims to **promote space awareness among children** — has made the **satellite expandable**: the **8-unit satellite** will have a spring mechanism-based external frame, which will open up once the satellite is in orbit. After the frame opens up, the satellite will become four times its size.
4. **The satellite will also carry the G20 logo** to space and the **NCC song** to celebrate **75 years of the organisation**.

BUDGET'S GREEN GROWTH PUSH

The Finance Minister listed '**Green Growth**' as **one of the seven priorities** of her Budget. She said that **these seven principles complement each other** and act as the '**Saptarishi**' guiding India through the Amrit Kaal. **Green Growth is the fifth** of these **seven priorities**.

The component elements of the Budget's Green Growth push

1. **Green Hydrogen Mission**: The recently launched **National Green Hydrogen Mission**, with an outlay of Rs 19,700 crores, will **facilitate transition of the economy to low carbon intensity**, **reduce dependence on fossil fuel imports**, and make the country assume technology and market leadership in this sunrise sector.

2. **Energy Transition:** The Budget has provided Rs 35,000 crore for priority capital investments towards **energy transition** and **net zero objectives**, and **energy security** by Ministry of Petroleum & Natural Gas.
3. **Energy Storage Projects:** To steer the economy on the **sustainable development path**, **Battery Energy Storage Systems** with capacity of 4,000 MWH will be supported with **Viability Gap Funding**. A detailed framework for **Pumped Storage Projects** will also be formulated.
4. **Renewable Energy Evacuation:** The **Inter-state transmission system for evacuation** and **grid integration of 13 GW renewable energy** from Ladakh will be constructed with investment of Rs 20,700 crore including central support of ₹ 8,300 crore.
5. **Green Credit Programme:** For **encouraging behavioural change**, a **Green Credit Programme** will be notified under the **Environment (Protection) Act**. This will **incentivize environmentally sustainable and responsive actions** by companies, individuals and local bodies, and help mobilize additional resources for such activities.
6. **PM-PRANAM:** A new “**PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth**” will be launched to incentivize States and Union Territories to promote alternative fertilizers and balanced use of chemical fertilizers.
7. **GOBARdhan scheme:** 500 new ‘**waste to wealth**’ plants under **GOBARdhan (Galvanizing Organic Bio-Agro Resources Dhan)** scheme will be established for promoting **circular economy**. These will include **200 compressed biogas (CBG) plants**, including **75 plants in urban areas**, and 300 community or **cluster-based plants** at total investment of Rs 10,000 crore, the FM said.
8. **Bhartiya Prakritik Kheti Bio-Input Resource Centres:** The FM has proposed to facilitate over the **next three years 1 crore farmers** to adopt **natural farming**. For this, **10,000 Bio-Input Resource Centres** will be set-up, creating a national-level distributed micro-fertilizer and pesticide manufacturing network.
9. **MISHTI:** Building on **India’s success in afforestation**, ‘**Mangrove Initiative for Shoreline Habitats & Tangible Incomes**’, **MISHTI**, will be taken up for **mangrove plantation along the coastline** and on salt pan lands, wherever feasible, through convergence between **MGNREGS, CAMPA Fund** and other sources.
10. **Amrit Dharohar:** **Wetlands are vital ecosystems** which sustain **biological diversity**, the FM said. The government will promote **their unique conservation values through Amrit Dharohar**, a scheme that will be implemented over the next three years to **encourage optimal use of wetlands**, and **enhance bio-diversity, carbon stock**, eco-tourism opportunities and income generation for local communities.
11. **Coastal Shipping:** Coastal shipping will be promoted as the **energy efficient and lower cost mode of transport**, both for passengers and freight, through PPP mode with viability gap funding.
12. **Vehicle Replacement:** **Replacing old polluting vehicles** is an important part of **greening our economy**. In furtherance of the **vehicle scrapping policy** mentioned in Budget 2021-22, I have allocated adequate funds to scrap old vehicles of the Central Government. States will also be supported in replacing old vehicles and ambulances.

LITHIUM CREATES SENSE OF EUPHORIA

A **sense of euphoria** has engulfed the country – quite understandably – after the **Ministry of Mines** announced on 10 February 2023 that the **Geological Survey of India** has discovered **lithium in Kashmir**, with inferred reserves of **5.9 million tonnes (mt)**. **Lithium** is the **primary ingredient** for making the most sought-after **electrochemical batteries**, viz., lithium-ion batteries.

How significant is the GSI discovery?

1. The **Ministry of Mines** has estimated that **the reserves could contain 5.9 mt of lithium**. To compare, the previous discovery in India, in the **Mandya district of Karnataka in 2021**, was estimated at **1,600 tons**.
2. To put this in perspective, **Bolivia has 21 mt, Argentina 17 mt, Chile 9 mt, US 6.8 mt, Australia 6.3 mt, and China 4.5 mt**.
3. However, the 5.9 mt estimate of the Kashmir find is only in the **'inferred' category**. A lot of work needs to be done before it is established as **mineable reserves**.
4. The GSI survey was a **'preliminary survey' (or, 'G3')**, which is the **second step in the exploration of minerals** after **'reconnaissance surveys (G4)**.
5. After further exploration, the exact reserves will be determined and then will start the process of securing **environmental clearances** and tendering out for mining. Hopefully, as all this happens, a processing industry will evolve in India.

What is lithium?

1. **Lithium is a metal**: the **lightest metal** and the **third element in the periodic table**, after hydrogen and helium, **both of which are gases**.
2. It is **highly reactive**. If you put a pellet of lithium in water, it will start sizzling like pakora in hot edible oil and could even catch fire.
3. It is extremely light and a **good donor of electrons**—which makes it the **preferred electrode material** in batteries.
4. But to make better batteries, **lithium is mixed with other elements**, such as **cobalt, iron, phosphorous or sulphur**: but it remains the main stuff in lithium-ion batteries

LABORATORY-GROWN DIAMONDS

The 2023 **Union Budget shines** special attention on **laboratory-grown diamonds (LGD)**. The sector has **"high employment potential"** and announced a number of schemes to **promote their research and development** in India.

About laboratory-grown diamonds

1. LGD are **manufactured in laboratories**, as opposed to naturally-occurring diamonds. The **chemical composition and other physical** and optical properties of the two are the same.
2. **Naturally-occurring diamonds take** millions of years to form; they are created when carbon deposits buried within the earth are exposed to extreme heat and pressure.
3. **LGDs** are mostly **manufactured through two processes** – high pressure, high temperature (**HPHT**) **method** or Chemical Vapour Deposition (**CVD**) **method**.
4. In the **HPHT method**, the seed, along with pure graphite carbon, is exposed to temperatures around 1,500 degrees Celsius and extremely high pressure.
5. In the **CVD method**, the seed is heated to around 800 degrees Celsius inside a sealed chamber filled with a carbon-rich gas. The gas sticks to the seed, gradually building the diamond.
6. **Scientists working** at a General Electric research laboratory in **New York** are credited with the **creation of the world's first-ever LGD in 1954**.

What are LDGs used for?

1. **LDGs** have basic properties **similar to natural diamonds**, including their **optical dispersion**, which provide them the **signature diamond sheen**.
2. However, since they are created in controlled environments, many of their properties can be enhanced for various purposes.
3. For instance, **LDGs are most often used for industrial purposes**, in machines and tools. Their **hardness and extra strength** make them ideal for use as cutters.
4. Furthermore, **pure synthetic diamonds have high thermal conductivity**, but **negligible electrical conductivity**.

- This combination is invaluable for electronics where such diamonds can be used as a **heat spreader for high-power laser diodes, laser arrays and high-power transistors.**
- Lastly, as the **Earth's reserves of natural diamonds are depleted**, LDGs are slowly replacing the prized gemstone in the jewelry industry.

SICKLE CELL ANAEMIA BUDGET 2023

A **Mission to eliminate Sickle Cell Anaemia by 2047** will be launched in budget 2023. It will entail awareness creation, **universal screening of 7 crore people** in the age group of **0-40 years** in affected tribal areas, and counselling through collaborative efforts of central ministries and state governments.

What is sickle cell anaemia?

- It is an **inherited genetic disease** where a **point mutation in haemoglobin** makes it abnormal and prone to structure change.
- This causes the **red blood cells to take an abnormal "sickle" shape**, which **obstructs blood flow**.
- This can lead to severe **haemolysis, persistent anaemia and affects the functioning of other organs** in the later stages.
- Common symptoms are **anaemia, jaundice, liver and spleen enlargement**. In severe cases, patients have debilitating orthopaedic conditions called **avascular necrosis of femur**.
- The disease can be **very severe and reduces quality of life**. Patients have very painful conditions called "crisis." There is no complete cure.
- The only way we can help the patient is **by providing symptomatic treatment and pain management. Improve nutritional status**.
- There is a drug called **Hydroxyurea** that has been shown to reduce morbidity. Currently, my organisation, **Sudam Kate Research Foundation**, is conducting a clinical trial of this drug on patients in collaboration with ICMR to see its efficacy in Indian Sickle Cell patients.

What is the burden of disease?

- The disease burden from **Sickle Cell anaemia in India** is prevalent in tribal populations, especially in Maharashtra.
- The disease burden figures may exceed **14 lakh across India**, but with intensified screening, the numbers are likely to increase.
- Tribes like **Pawara, Bhil, Madia, Gond and Pardhan** from Maharashtra have a very high prevalence.
- Approximately **more than three lakh patients in the tribal areas** are affected. **Sickle cell anaemia** is most prevalent in the central India belt covering states like Gujarat, Maharashtra, Chhattisgarh, Orissa and parts of Bengal. There are pockets in the south, Tamil Nadu, Kerala and parts of Telangana.

ETHANOL BLENDING PETROL & INDIA'S E20

On 6 February 2023, **India launched a pilot for E20**, or **petrol blended with 20% ethanol** at the 'India Energy Week' in Bengaluru, bringing forward by two years the launch of a **cleaner-burning version of petrol**.

What is Ethanol Blending?

- Ethyl alcohol or Ethanol (C₂H₅OH)** is a **biofuel** that is naturally made by fermenting sugar.
- While it is mostly derived by **extracting sugar from sugarcane**, other organic matter like **foodgrains** can also be used for its production.
- As part of its **carbon reduction commitments**, India has launched the **Ethanol Blended Petrol (EBP) programme** to mix this biofuel with petrol to reduce the consumption of fossil fuel.
- Earlier, the government announced **the achievement of E10 target**, that is, the petrol used in the country has 10% ethanol in it.

5. Prime Minister Modi launched the **pilot of E20 across at least 15 cities**. The same is expected to be rolled out across the country in a phased manner in the coming months and years.

Why E20?

1. According to “**Roadmap for Ethanol Blending in India: 2020-2025**” a report by a special expert committee set up by the Centre, **India’s net import of petroleum was 185Mt** at a cost of \$551 billion in 2020-21.
2. Most of the petroleum products are used in transportation. Hence, a **successful E20 programme can save the country \$4 billion per annum**, that is, around **Rs 30,000 crore**.
3. Besides, **ethanol is a less polluting fuel**, and offers equivalent efficiency at lower cost than petrol.
4. Availability of **large arable land**, **rising production of foodgrains** and sugarcane leading to surpluses, availability of technology to produce ethanol from plant based sources, and **feasibility of making vehicles compliant to ethanol blended petrol** make E20 not only a national imperative, but also an important strategic requirement.

BARD, GOOGLE’S ANSWER TO ‘CHATGPT’

Google has finally **decided to answer the challenge** and threat posed by Microsoft-backed OpenAI and its AI chatbot, ChatGPT. The **search giant confirmed** it will soon start public testing for a **new AI chatbot of its own called Bard**, based on the **company’s Language Model** for Dialogue Application or **LaMDA**.

More about the news:

1. **Alphabet and Google CEO** spoke about how **AI-based features** would be coming to Google Search as well.
2. It should be noted that so far **LaMDA was available in limited testing** to select users of the company’s AI Test Kitchen app.

About Bard and its accessibility:

1. **Bard is based on LaMDA** and Google’s **own conversational AI chatbot**.
2. It is an “**experimental conversational AI service,**” and Google will be “**opening it up to trusted testers** ahead of making it more widely **available to the public** in the coming weeks. It’s not yet publicly available.
3. Bard “**draws on information from the web** to provide fresh, high-quality responses. It will **give in-depth, conversational and essay-style answers** just like ChatGPT does right now.

Disadvantages:

1. Running these models also **requires significant computing power**. For instance, ChatGPT is powered by Microsoft’s Azure Cloud services.
2. The **service often runs into errors** at times, because too many people are accessing it.

Comparison of Bard with ChatGPT:

1. Bard looks like a **limited rollout** right now. Google is **looking for a lot of feedback** at the moment around Bard, so it is **hard to say** whether it can answer more questions than ChatGPT.
2. Google has also **not made clear the amount of knowledge** that Bard possesses.
3. ChatGPT **knowledge is limited to events till 2021** and it is based on LaMDA.
4. Bard is **built on Transformer technology** which is also the backbone of ChatGPT and other AI bots.

MISCELLANEOUS

THE NORTH STAR OF DEMOCRACY

Vice President and Rajya Sabha Chairman Jagdeep Dhankhar on 3 February 2023 said **Parliament is the “North Star” of democracy** and everyone is required to work in accordance with rules. Some days back, Chief Justice D Y Chandrachud had called **the basic structure doctrine a “North Star”** that gives **“certain direction to the interpreters and implementers of the Constitution** when the path ahead is convoluted”.

What do these men mean by “North Star”?

1. **Polaris**, also known as the **North Star or the Pole Star**, is a **very bright star** (around 2500 times more luminous than our sun) placed **less than 1° away from the north celestial pole**.
2. Its position and brightness have made humans use it for navigation since late antiquity. It is a part of the **constellation Ursa Minor** and is around **323 light-years away from Earth**.
3. Since **Polaris lies nearly in a direct line with the Earth’s rotational axis** “above” the North Pole, it stands almost **motionless in the night sky**, with all the stars of the northern sky appearing to rotate around it.
4. This makes it **an excellent fixed point** from which to draw measurements for **celestial navigation**.
5. Simply the **elevation of the star above the horizon gives the approximate latitude of the observer** and in the northern hemisphere, if you can see Polaris you can always tell which way is north (and, by extension, which ways are south, east and west).
6. Upon **crossing the equator to the South**, the **North Star is lost over the horizon** and hence stops being a useful navigational aid.

When the North Star was first used to navigate?

1. **Polaris** seems to have been **first charted** by the Roman mathematician and astronomer **Ptolemy**, who lived from **about 85 to 165 B.C.**
2. While there does exist some evidence pointing at **how the star was used for navigation in late antiquity**, it is during the **‘Age of Exploration’** that it becomes such a central part of human history.
3. **Christopher Columbus**, on his **first trans-Atlantic voyage of 1492**, “had to correct (his ship’s bearings) for the circle described by the pole star about the pole”, wrote his son in his biography.
4. As European colonisers set sail for exotic locations across the world, the **North Star became an ever so important feature of the night sky** that allowed for remarkably accurate navigation using instruments which were still rudimentary by modern standards.

TURKEY WITH THE AFTERSHOCKS

Turkey and Syria can’t catch a break. Since 6 February 2023 **devastating quake, aftershocks have ripped through the region.** Altogether, **nearly 8,000 people** have been announced dead so far. The number is **expected to rise** because countless people **are still trapped below the rubble** — and because **continued aftershocks** will cause already-unstable buildings to collapse.

What is an aftershock?

1. **Large earthquakes** are almost always **followed by small earthquakes** called **aftershocks**. They are **generally strongest in the 48 hours** following the **main quake** and can last weeks and even years in some cases.
2. Typically, **the magnitude of aftershocks starts around one degree less** than the initial event — so, for example, if the quake has a magnitude of 7, seismologists might expect an aftershock of 6.
3. That’s the average occurrence but it sometimes happens that it isn’t like that at all.
4. **Sometimes you get an aftershock that’s actually larger than the main shock.** So as a seismologist, you always have to be prepared to be surprised by what the Earth throws at you.
5. In the **Turkey-Syria border region**, the **aftershocks have been almost as strong** as the initial quake.

- An earthquake is considered an aftershock and **not an individual quake** when it occurs **between 1 and 2 fault lines away from a preceding earthquake**. Generally, **aftershocks are the result of the Earth's tectonic plates** trying to shift back into place along a fault line.
- More than 100 aftershock earthquakes** have occurred since the initial earthquake in Turkey and Syria. **Aftershocks may not occur if the initial earthquake is very small**. But in the case of larger earthquakes, they are a given.

When do aftershocks occur?

- This depends on the **size of the initial earthquake**. Although the **more intense aftershocks will probably stop around two days after the initial quake**, it is possible for the aftershocks **to gradually decay**, but not completely cease until a year after the main quake.
- Other research suggests that in some areas, like the New Madrid fault in the US state of Missouri, small aftershocks can continue for centuries after the initial shock.

INTERNATIONAL DAY OF WOMEN AND GIRLS IN SCIENCE

Celebrated every year on 11 February, the **International Day of Women and Girls in Science** is observed by the **United Nation** to promote the **full and equal access and participation of women in Science, Technology, Engineering and Mathematics (STEM)** fields.

More about the day

- It will be the **eighth International Day of Women and Girls in Science** and the theme is **IDEAS (Innovate, Demonstrate, Elevate, Advance, Sustain)**.
- The aim is to build a bridge between the international community and women in science through linking their knowledge and expertise and its applications in a systematic, critical way for the 2030 agenda and its 17 global goals.
- This year, the focus is on **the role of women and girls and science** as relates to the **Sustainable Development Goals (SDGs)** including— **SDG 6 (clean water and sanitation)**, **SDG 7 (affordable and clean energy)**, **SDG 9 (industry, innovation, and infrastructure)**, **SDG 11 (sustainable cities and communities)** and **SDG17 (means of implementation)**.
- This year, the aim is **to connect the international community to women and girls in science**, strengthening the ties between science, policy, and society for strategies oriented towards the future.
- The **United Nations** will showcase best practices, **strategies**, applied solutions in **addressing SDGs challenges and opportunities**.
- It will also include a science workshop for blind girls and a session from the blind fellow scientists on **“Science in Braille: Making Science Accessible.”** This workshop and session will be held for the first time.
- As per the United Nations, **“gender equality and the empowerment of women and girls will make a crucial contribution not only to economic development of the world, but to progress across all the goals and targets of the 2030 Agenda for Sustainable Development, as well.”**

History

- On 14 March 2011, the **Commission on the Status of Women** adopted a report that aimed to **encourage the participation of women and girls in education**, training and science and technology; moreover, focusing on the promotion of **women's equal access to full employment and decent work**.
- On 20 December 2013, the **General Assembly** adopted a resolution on **science, technology and innovation for development**, in which it recognised that to achieve **gender equality** and the **empowerment of women and girls**, they should have full and equal access and participation in science, technology and innovation. It is imperative for women and girls of all ages.

FIRST STRETCH OF DELHI-MUMBAI EXPRESSWAY

Prime Minister 12 February 2023 inaugurated a **246-km stretch** of the **Delhi-Mumbai Expressway**; the **Delhi-Dausa-Lalsot section is set to reduce the travel time** from the **national capital to Jaipur** from five hours to around three and a half hours. The Prime Minister also added that **rural 'haats'** are being developed around the expressway where the **local artisans can sell their wares**.

More about the Expressway

1. The first completed stretch of the **mammoth expressway** is part of the government's **Golden Quadrilateral project** that aims to span the length and breadth of the country.
2. The **Delhi-Mumbai Expressway** is set to be the **longest in India** at 1,386 km.
3. The roadway is aimed at **cutting down the distance between Delhi and Mumbai** by 12%, from 1,424 km to 1,242 km
4. Travel time is expected to go down by 50%, making a trip possible in 12 hours.
5. The expressway will pass through **six states** - Delhi, Haryana, Rajasthan, Madhya Pradesh, Gujarat and Maharashtra - while connecting major cities like Kota, Indore, Jaipur, Bhopal, Vadodara and Surat.
6. This project will have pathways to **93 PM Gati Shakti Economic Nodes**, 13 ports, eight major airports and eight multi-modal logistics parks (MMLPs).
7. Also connected will be the upcoming **greenfield airports in Jewar and Navi Mumbai**.

FACT TO REMEMBER:

1. 'UNITY MALL' IN EVERY STATE CAPITAL
2. DRAFT GEO-HERITAGE SITES AND GEO-RELICS BILL
3. MEASURES TRIBAL WELFARE IN BUDGET 2023
4. LEGALITY OF THE NORTHERN IRELAND PROTOCOL
5. PROPOSED CHANGE IN ANGEL TAX
6. UNION BUDGET HIGHLIGHTS 2023-24
7. ISRO'S FIRST LAUNCH OF 2023
8. LITHIUM CREATES SENSE OF EUPHORIA
9. SICKLE CELL ANAEMIA BUDGET 2023
10. INTERNATIONAL DAY OF WOMEN AND GIRLS IN SCIENCE

QUESTIONS IN LAST YEAR (2022) PT FROM MY NOTES

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