

DAILY CURRENT AFFAIRS (DCA)

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INDIA-U.S. STRENGTHEN HIGH TECHNOLOGY COOPERATION

In News

- India & US Hold Deliberations On Initiative Of Critical And Emerging Technology.

Key areas of focus

- **Bridging Innovation Ecosystems:** The two nations are unlocking US\$90 million in government funding over the next five years for the **India-US Global Challenges Institute**.
 - ♦ It will foster high-impact university and research partnerships in areas such as semiconductor technology, sustainable agriculture, clean energy, health equity, and pandemic preparedness.
- **Advancing Space Technology Cooperation:** A landmark achievement is the collaboration between **NASA and ISRO** astronauts for a mission to the International Space Station.
 - ♦ The Strategic Framework for Human Spaceflight Cooperation aims to enhance interoperability in space, with advanced training for ISRO astronauts at NASA's Johnson Space Center.
 - ♦ The NASA-ISRO Synthetic Aperture Radar satellite, which will map the Earth's surface, is another notable project.
 - ♦ Additionally, the US Space Force is partnering with Indian startups like 114ai and 3rdiTech to advance space situational awareness and other technologies.
- **Deepening Defence Innovation:** Discussions on India's acquisition of **MQ-9B platforms**, co-production of **land warfare systems**, and other defense initiatives are progressing.
 - ♦ These high-altitude, long-endurance drones will significantly bolster India's surveillance and reconnaissance capabilities, enhancing its ability to monitor vast maritime and land borders effectively.
 - ♦ The INDUS-X Summit highlighted several initiatives, including the launch of the INDUS-X Investor Summit in Silicon Valley and the awarding of \$1.2 million in seed funding to U.S. and Indian companies
- **Expanding Telecommunications Opportunities:** The finalization of the India-US Open RAN Acceleration Roadmap and ongoing 5G and 6G R&D collaboration were significant milestones.
 - ♦ Partnerships are being built to deploy high-quality, cost-effective Open RAN technology, with notable contributions from Qualcomm and Mavenir.
- **Strengthening Biotechnology and Bio-manufacturing:** The launch of the Track 1.5 Biopharmaceutical Supply Chain Consortium aims to enhance resilience in supply chains and foster high-impact R&D collaboration.
- **Securing Semiconductor Supply Chains:** A new strategic semiconductor partnership between General Atomics and 3rdiTech will focus on co-developing semiconductor design and manufacturing.
 - ♦ The Semiconductor Readiness Assessment identified near-term industry opportunities and strategic development of semiconductor ecosystems.
- **Promoting Clean Energy and Critical Minerals Partnership:** India's role in the Mineral Security Partnership is vital, with co-investments in lithium and rare earths projects.
 - ♦ An Advanced Materials R&D Forum will expand collaboration between American and Indian researchers.
 - Efforts to quickly conclude a bilateral Critical Minerals Memorandum of Understanding are underway, focusing on technologies for critical minerals.
- **Enhancing Quantum, AI, and High-Performance Computing Collaboration:** New cooperation in quantum science and technology includes launching a workshop on post-quantum cryptography and facilitating visits of Indian technical experts to US quantum institutions.
 - ♦ The India-US Science and Technology Endowment Fund will announce winners of the "Quantum Technologies and AI for Transforming Lives" competition, fostering joint R&D.

Significance

- United States and India Continue to Chart an Ambitious Course for the Initiative on Critical and Emerging Technology
- The collaborative spirit between India and the US is evident in recent initiatives, marking a new era in their strategic partnership in critical and emerging technologies.

- This partnership is poised to drive innovation, enhance security, and promote economic growth for both nations and the broader Indo-Pacific region.

Do you know ?

- In July 2023, India released a list of 30 minerals critical for the country and has been looking to acquire mines abroad in addition to expanding exploration within the country.
- India has **incorporated a joint venture company Khanij Bidesh India Ltd. (KABIL)** with the objective of acquiring critical mineral assets abroad to ensure consistent supply of critical and strategic minerals to the Indian domestic market.
 - ◆ KABIL is presently exploring opportunities for acquisition of critical minerals assets like lithium and cobalt in Australia, Argentina and Chile.
- India has already joined the **mineral security partnership** led by the U.S.

Source: TH

MSP HIKES FOR 14 KHARIF CROPS

Context

- The Union Cabinet approved an increase in the minimum support prices (MSP) for all 14 kharif crops for the 2024-25 crop season.

What is MSP?

- **Minimum Support Price (MSP)** is a form of market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices. MSP protects the producer-farmers against distress sale during bumper production years.
- **MSPs have no statutory backing** — a farmer cannot demand MSP as a matter of right.

Crops Covered

- The Centre announces the **MSP for 22** mandated crops. These include:
 - ◆ **14 kharif crops** (paddy, jowar, bajra, maize, ragi, tur/arhar, moong, urad, groundnut, soyabean, sunflower, sesamum, niger seed, cotton),
 - ◆ **6 rabi crops** (wheat, barley, gram, masur/lentil, rapeseed and mustard, and safflower) and **2 commercial crops** (jute and copra).

- In addition, **MSP for Toria and de-husked coconut** is also fixed on the basis of MSPs of rapeseed & mustard and copra respectively.

Fair and Remunerative Price (FRP)

- FRP is the minimum price at which the sugar mills purchase sugarcane from farmers.
- The Cabinet Committee of Economic Affairs announces the FRP on the recommendations of CACP.

Who decides what the MSP would be and how?

- The Cabinet Committee of Economic Affairs announces the MSP at the start of each sowing season, taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP).
- While recommending MSPs, the CACP looks at following factors:
 - ◆ the demand and supply of a commodity;
 - ◆ its cost of production;
 - ◆ the market price trends (both domestic and international);
 - ◆ inter-crop price parity;
 - ◆ the terms of trade between agriculture and non-agriculture (that is, the ratio of prices of farm inputs and farm outputs);
 - ◆ a minimum of 50 per cent as the margin over the cost of production; and
 - ◆ the likely implications of an MSP on consumers of that product.

Calculation Formula

- **The CACP** makes projections using state-wise, crop-specific production cost estimates provided by the Directorate of Economics & Statistics in the Agriculture Ministry.
 - ◆ The CACP does not do any field-based cost estimates itself.
- The CACP calculates **three** types of costs — **A2, A2+FL and C2** — for each mandated crop for different states.
 - ◆ **A2 cost:** It is the lowest and covers all paid-out costs directly incurred by the farmer — in cash and kind — on seeds, fertilizers, pesticides, hired labor, leased-in land, fuel, irrigation, etc.
 - ◆ **A2+FL cost:** It includes A2 plus an imputed value of unpaid family labor.

- ♦ **C2 cost:** It is the highest of the three costs and defined as a more comprehensive cost that factors in rentals and interest for owned land and fixed capital assets, on top of A2+FL.
- **The National Commission for Farmers**, chaired by **MS Swaminathan**, had recommended MSP under the **C2+50 percent formula**. That is, the total cost of the crop (C2) and the profit thereon is **50 percent**.
 - ♦ However, the government announces **MSP on the basis of A2+FL**.
- **Storage and Logistics Challenges:** MSP operations require effective storage and logistics infrastructure to handle the procurement of large quantities of crops. Inadequate facilities can lead to wastage and storage-related losses.
- **Fiscal Burden:** Implementing MSPs can impose a significant fiscal burden on the government. Procuring crops at guaranteed prices and managing surplus stocks require substantial financial resources, impacting the government's budget and fiscal health.

Benefits of Minimum Support Price (MSP)

- **Income Security:** MSP guarantees farmers a minimum price for their crops, ensuring a stable income and protecting them from market price fluctuations.
- **Price Stability:** MSP helps stabilize the prices of agricultural products, preventing extreme fluctuations and ensuring affordable prices for consumers.
- **Encourages Production:** Minimum Support Price motivates farmers to increase their agricultural production by providing them with a fair price for their produce.
- **Food Security:** MSP promotes a steady food supply by encouraging farmers to produce staple crops, reducing dependence on imports, and enhancing domestic food security.

Issues associated with the MSP system

- **Distorted Crop Selection:** The MSP regime often focuses on a few crops, such as rice and wheat, leading to imbalanced crop selection. This can result in overproduction of certain crops and neglect of others, affecting the overall diversity and sustainability of agriculture.
- **Market Distortions:** MSPs can create market distortions by influencing the cropping pattern and leading to surplus production of certain crops. This surplus can lead to storage challenges, market inefficiencies, and distortions in price signals.
- **Limited Coverage:** The MSP system primarily covers a few crops and not all agricultural produce. This leaves farmers growing crops outside the MSP framework vulnerable to market fluctuations and price uncertainties.

Way Ahead

- **Diversify Agriculture:** Emphasize investments in animal husbandry, including fisheries, and fruits and vegetables, which are more nutritious and have the potential for higher income generation.
- **Encourage Private Sector Involvement:** The government should incentivize the private sector to develop efficient value chains for agriculture, following a cluster approach.
- **True MSP Intervention:** A genuine MSP should involve government intervention when market prices fall below a predefined level, especially in cases of excess production, oversupply, or price collapse due to international factors.

Source: TH

NATIONAL FORENSIC INFRASTRUCTURE ENHANCEMENT SCHEME (NFIES)

Context

- The Union Cabinet approved the National Forensic Infrastructure Enhancement Scheme (NFIES) to achieve better conviction rates in criminal cases.

About

- It is a **Central Sector Scheme** with a financial outlay of **Rs. 2254.43 crore** during the period from **2024-25 to 2028-29**.
- The Cabinet has approved the following **components** under this Scheme:
 - ♦ Establishment of Campuses of the National Forensic Sciences University (NFSU) in the country.
 - ♦ Establishment of Central Forensic Science Laboratories in the country.
 - ♦ Enhancement of existing infrastructure of the Delhi Campus of the NFSU.

Need for the Scheme

- With the **enactment of the new criminal laws which mandates forensic investigation** for offenses involving punishment of seven years or more, there will be a significant **increase in the workload** of forensic science laboratories.
- There is a significant **shortage of trained forensic manpower** in the Forensic Science Laboratories (FSL) in the country.
- Upgraded forensic infrastructure allows **India to meet international standards**, facilitating better collaboration with global forensic bodies and law enforcement agencies.

Advantages of improved forensic investigation facilities

- **Improved Crime Investigation:** New CFSLs enhance the capacity for scientific analysis of evidence, aiding in the swift and accurate resolution of criminal cases.
- **Speedy Justice:** Efficient and timely forensic analysis contributes to quicker resolution of legal cases, ensuring justice is served promptly.
- **Job Creation:** New campuses and labs create employment opportunities for academic, administrative, and technical staff.
- It will **address the shortage of trained forensic manpower** and will enhance the accuracy, efficiency, and credibility of investigations and legal proceedings.

Source: [IE](#)

VIABILITY GAP FUNDING (VGF) SCHEME FOR OFFSHORE WIND ENERGY PROJECTS

Context

- The Union Cabinet approved the **Viability Gap Funding (VGF) scheme** for **offshore wind energy projects**.

Viability Gap Funding (VGF) Scheme

- The VGF scheme is a major step towards implementation of the **National Offshore Wind Energy Policy notified in 2015** with an aim to **exploit the vast offshore wind energy potential** that exists within the exclusive economic zone of India.
- **Nodal Agency: Ministry of New and Renewable Energy**, as the nodal ministry, will coordinate

with various Ministries/Departments to ensure successful implementation of the scheme.

- **Implementation:** It includes installation and commissioning of 1 GW of offshore wind energy projects (500 MW each off the coast of Gujarat and Tamil Nadu), and upgradation of two ports to meet logistics requirements for offshore wind energy projects.
- **Significance:** The VGF support from the Government will reduce the cost of power from offshore wind projects and make them viable for purchase by DISCOMs.
 - ♦ The successful commissioning of 1 GW offshore wind projects will produce renewable electricity of about 3.72 billion units annually, which will result in annual reduction of 2.98 million ton of CO₂ equivalent emission for a period of 25 years.
 - ♦ It will lead to creation of required ecosystems in the country to supplement its ocean based economic activities.

Offshore Wind Energy

- Offshore wind power or offshore wind energy is the energy taken **from the force of the winds out at sea**, transformed into electricity and supplied into the electricity network onshore.
- It is a source of **renewable energy** which offers several advantages over onshore wind and solar projects, such as **higher adequacy & reliability, lower storage requirement and higher employment potential**.

Advantages

- **Higher Outcome:** Wind speeds tend to be faster and more consistent offshore compared to onshore locations.
 - ♦ This means offshore turbines can generate more electricity on average.
- **Reduced Noise Impact:** Offshore wind farms are located far from populated areas, reducing visual and noise impacts compared to onshore installations.
- **More Space:** Offshore locations offer more available space for larger and more numerous turbines, potentially generating more electricity per site.
- **Less Obstruction:** Turbines can be placed in deeper waters where they are less likely to obstruct shipping lanes or interfere with other land uses.

Disadvantages

- **Higher Installation Costs:** Installation and maintenance costs for offshore wind farms are higher than for onshore due to the complexities of marine construction and logistics.
- **Environmental Impact:** Construction and operation can affect marine ecosystems and wildlife, although modern projects incorporate environmental assessments and mitigation measures.

Conclusion

- Despite these challenges, the growth of offshore wind energy has been substantial in many parts of the world, driven by increasing energy demand, climate change concerns, and advancements in technology and policy supporting renewable energy development.
- Countries like the UK, Germany, and Denmark have been leaders in offshore wind deployment, with several ambitious projects planned or underway globally.

Source: PIB

KRISHI SAKHIS

Context

- Prime Minister Narendra Modi distributed certificates to over 30,000 self-help groups trained as **Krishi Sakhis** to work as para extension workers.

About Krishi Sakhi

- Krishi Sakhi is one dimension under the '**Lakhpati Didi**' program which aims to create 3 crore Lakhpati Didis.
- **The Krishi Sakhi convergence program (KSCP)** aims to transform rural India through the empowerment of rural Women as Krishi Sakhis, by imparting training and certification of Krishi Sakhis as Para-extension Workers.
- Right now the Krishi Sakhi training program has been rolled out in **12 states** in Phases.
 - ♦ In the first phase, women of Gujarat, Tamil Nadu, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Karnataka, Maharashtra, Rajasthan, Odisha, Jharkhand, Andhra Pradesh, and Meghalaya will be trained as Krishi Sakhis.

- On an average, a Krishi Sakhi can earn around **Rs 60,000 to 80,000 in a year.**

Para Extension Workers

- **Krishi Sakhis are trained by professionals** on various agriculture related extension services for **56 days on various activities.**
- Krishi Sakhis are chosen as agriculture para-extension workers because they are **trusted community resource persons and experienced farmers themselves.**

Women in Agriculture in India

- **Participation:** In India, Agriculture employs about **80 percent of rural women.**
 - ♦ As per the Annual Periodic Labour Force Survey, 2021-2022, agriculture has the **highest estimated female labour force participation of 62.9 per cent.**
 - ♦ Economic Survey 2017-18, says with growing rural-to-urban migration by men, there is '**feminisation**' of the agriculture sector, with an increasing number of women in multiple roles as cultivators, entrepreneurs, and labourers.
- **Activities:** Rural women are also engaged in **allied fields** including livestock rearing, horticulture, post-harvesting operations, agro/social forestry, fishing, etc.
 - ♦ Most **labor-intensive manual operations** in agriculture such as cattle management, fodder collection, milking, threshing, winnowing, etc., are performed by women.
- **Significance:** The community management role played by rural women helps ensure the dissemination of information and extension at the community level.
 - ♦ Rural women are responsible for the integrated management and use of diverse natural resources to meet the daily household needs.

Conclusion

- With the participation of women in agriculture and allied activities becoming more significant, it becomes **essential to keep women at the center of India's policy initiative.**
- The challenge of ending poverty can only be achieved with the end of **gender-based discrimination.**

- The Indian government in its vision has realized the gap and is striving toward **poverty alleviation** through training programs, financial inclusion, strengthening of social services, and creating awareness of women's rights.

Source: TP

NEWS IN SHORT

NALANDA UNIVERSITY

Context

- The Prime Minister inaugurated the new campus of Nalanda University, close to the site of the ancient ruins of Nalanda in Rajgir, Bihar.

About

- The Parliament of India established the Nalanda University through the **Nalanda University Act, 2010**.
- It started functioning in **2014** from a makeshift location with 14 students, and construction work started in 2017.

Ancient Nalanda University

- The ancient **Nalanda University** was established in the **5th century** by the Gupta ruler **Kumaragupta I**.
- It includes **stupas, shrines, viharas** (residential and educational buildings) and important art works in stucco, stone and metal.
- It was patronized by various rulers including King **Harshavardhana of Kannauj** (7th century CE) and the **Pala rulers** (8th – 12th century CE).
- It flourished for 800 years before it was burnt down by **Bakhtiar Khilji** in the **12th century**.
- The site after its decline was first discovered by **Sir Francis Buchanan** and was systematically excavated and consolidated by the Archaeological Survey of India.

Academic Curriculum

- The **curriculum** of Nalanda included major Buddhist philosophies like **Madhyamaka, Yogachara and Sarvastivada**, as well as other subjects like the Vedas, grammar, medicine, logic, mathematics, astronomy and alchemy.

- Chinese scholar **Xuanzang (Hsüan-tsang)** visited Nalanda in 637 and 642 CE, and studied under the guidance of **Shilabhadra**.

Significance

- It attracted students from all over the world and stands out as the **most ancient university** of the Indian Subcontinent.
- In **2016** it was inscribed as a **World Heritage Site by UNESCO**.

Source: TH

KAFALA SYSTEM

Context

- Recently the Kafala system came into light after 49 migrant workers were killed in a fatal fire in Kuwait.

What is the Kafala system?

- The kafala, or sponsorship, system defines the **relationship between foreign workers and their local sponsor, or kafeel**, which is usually their employer.
- It has been used in **Gulf Cooperation Council (GCC)** countries—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates—as well as Jordan and Lebanon.
- Sponsors use private recruitment agencies in the countries of origin to find workers and facilitate their entry to the host country.

Concerns with the system

- In most situations, workers need their sponsor's permission to transfer jobs, end employment, and enter or exit the host country.
- Workers have little recourse in the face of exploitation, and many experts argue that the system facilitates modern slavery.

Source: TH

OFFSHORE AREAS (EXISTENCE OF MINERAL RESOURCES) RULES, 2024

In News

The Union government has introduced the **Offshore Areas (Existence of Mineral Resources) Rules, 2024** to start offshore mineral auctions.

- The rules also define the stages of exploration, feasibility studies, economic viability assessments, and classification of mineral resources and reserves.

About Offshore Areas (Existence of Mineral Resources) Rules, 2024

- It is a comprehensive regulatory framework that **mandates rigorous exploration standards** to ensure accurate assessment and sustainable development of offshore mineral resources.
- A minimum of general exploration (G2) is required to grant mining leases, while general exploration (G4) is necessary for obtaining composite licences.

Features

- **Coverage:** It covers various minerals, including silica sand, rare earth elements, and hydrothermal minerals, with tailored exploration approaches.
 - ♦ The Ministry of Mines has identified **10 offshore mineral blocks** for potential auction and is currently engaged in inter-ministerial consultations to secure the required approvals for conducting the auctions at the earliest opportunity.
- **Specific exploration norms:** It set specific exploration norms for a variety of deposits and minerals, including construction-grade silica sand, non-construction-grade calcareous sand, calcareous mud, phosphatic sediments, deep sea minerals, rare earth element (REE) minerals, hydrothermal minerals, and nodules.
- **Stages of exploration:** The rules define exploration for any mineral deposit in four stages: reconnaissance survey (G4), preliminary exploration (G3), general exploration (G2), and detailed exploration (G1).
 - ♦ Each stage reflects an increasing degree of geological assurance.
- **Feasibility :** These new rules categorise feasibility studies for offshore mineral resources into three stages:
 - ♦ geological study (F3), pre-feasibility study (F2), and feasibility study (F1).
- **Economic viability :** The economic viability of offshore mineral resources is classified into three stages:
 - ♦ intrinsically economic (E3), potentially economic (E2), and economic (E1).
 - Classification of economic viability into categories (E3, E2, E1) based on feasibility studies; emphasis on technical and environmental assessments.

Significance

- The introduction of these rules is a significant step towards responsible and efficient utilisation of our offshore mineral resources,
 - ♦ **It** ensures that each type of mineral deposit is thoroughly assessed according to its unique characteristics and potential impact.

Source: BS

DEFENCE PACT BETWEEN RUSSIA AND NORTH KOREA

In News

- North Korea and Russia have signed an agreement to strengthen their military cooperation

About the agreement

- The comprehensive partnership agreement signed includes provisions for mutual assistance in the event of aggression against either party.
 - ♦ Article 4 of the agreement states that if one of the countries gets invaded and is pushed into a state of war, the other must deploy “all means at its disposal without delay” to provide “military and other assistance”.
- They also agreed to work together to expand cooperation in trade and investment.
- The deal could mark the strongest connection between Moscow and Pyongyang since the end of the Cold War.

Repercussions

- The U.S. and its allies expressed growing concerns over a possible arms arrangement in which Pyongyang provides Moscow with badly needed munitions for its war in Ukraine, in exchange for economic assistance and technology transfers that could enhance the threat posed by Kim's nuclear weapons and missile program.

Do you know?

- North Korea and the former Soviet Union signed a treaty in 1961, which necessitated Moscow's military intervention if the North came under attack.
- The deal was discarded after the collapse of the USSR, replaced by one in 2000 that offered weaker security assurances.

Source: TH

NATIONAL FINANCIAL REPORTING AUTHORITY (NFRA)

Context

- The **National Financial Reporting Authority (NFRA)** is set to conduct its first annual inspection of eight audit firms, including the Big Five.

National Financial Reporting Authority (NFRA)

- It is a body constituted in **2018** under the provisions of Section 132 of the Companies Act, 2013.
- The duties of the NFRA are to:
 - Recommend accounting and auditing policies and standards to be adopted by companies for approval by the Central Government;
 - Monitor and enforce compliance with accounting standards and auditing standards;
 - Oversee the quality of service of the professions associated with ensuring compliance with such standards and suggest measures for improvement in the quality of service;
 - Perform such other functions and duties as may be necessary or incidental to the aforesaid functions and duties.
- The Companies Act requires the NFRA to have a **chairperson** who will be appointed by the Central Government and **a maximum of 15 members**.

Source: **ET**

ANGEL TAX

Context

- Amid a sharp decline in funding for startups and consequent job losses, **Indian Inc** has sought the **removal of Angel Tax**.

About

- Background:** Angel tax was introduced in **2012** to curb money laundering through high premiums on shares issued by closely-held companies, including startups.
 - The concern was that startups were being used as vehicles for converting black money into white by inflating the value of shares.
- It is income tax at the **rate of 30.6 percent**, it is levied when an unlisted company issues shares to an investor at a **price higher than its fair market value**.

- Earlier, it was imposed only on investments made by a resident investor.
- However the Finance Act 2023 proposed to extend Angel Tax even to non-resident investors from April 1, 2024.
- Concerns:** Startups and angel investors argued that the tax was unfair and detrimental to the growth of early-stage companies.
 - They pointed out that startups often have high valuations due to their potential rather than current financial metrics, which tax authorities did not always consider.

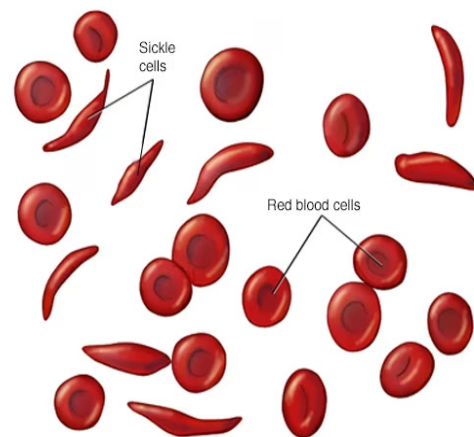
Source: **IE**

GENE THERAPY FOR SICKLE CELL DISEASE

Context

- Recently, the officials of the **Union Tribal Affairs Ministry** informed that **India is getting closer** to developing a gene therapy for sickle cell disease, a genetic blood disorder with a high prevalence rate among the Scheduled Tribes.

About the Sickle Cell Disease



- It is a genetic blood disorder characterised by **abnormal haemoglobin**, leading to **misshapen red blood cells (sickled cells)** causing blockages in blood vessels, resulting in severe pain, organ damage, and life-threatening complications.
- The mutation in haemoglobin causes **red blood cells** to take on a **crescent shape, impairing oxygen delivery**.
- Vaso-occlusive events (VOEs)** or crises result from blocked blood flow, leading to pain and organ damage.

- It primarily affects **African Americans and Hispanic Americans**.
- While traditional treatments like **hydroxyurea and blood transfusions** alleviate symptoms, they don't provide a cure.

Promise of Gene Therapy

- **Casgevy:** The FDA-approved cell-based gene therapy, Casgevy, utilises CRISPR/Cas9 technology.
 - ♦ Hematopoietic stem cells are modified using CRISPR/Cas9 to increase foetal haemoglobin (HbF) production.
 - ♦ Elevated HbF levels prevent red blood cell sickling.
 - ♦ Patients with recurrent VOs benefit from this innovative treatment.
- **Lyfgenia:** Another cell-based gene therapy, Lyfgenia, complements Casgevy in treating SCD.
- **Exa-cel:** This CRISPR-based treatment, developed by Vertex and CRISPR Therapeutics, functionally cured SCD for at least one year.

Challenges and Future Directions

- Cost-effectiveness remains a challenge for gene therapies.
- Screening vulnerable tribal populations and involving ground-level healthcare workers are crucial steps in this mission.
- India, in its **Union Budget 2023**, introduced the **National Sickle Cell Anaemia Elimination Program** to address the risks posed by sickle cell disease.
 - ♦ It is executed in a mission mode as part of the **National Health Mission (NHM)**, aims to **eliminate sickle cell genetic transmission by the year 2047**, showing a long-term commitment to eradicating the disease.

Source: TH

NEGLECTED TROPICAL DISEASES (NTDS)

Context

- Recently, it was reported that the close to **677 millions of people in India** required treatment against tropical diseases in 2021.

About the Neglected Tropical Diseases (NTDs)

- These are a group of **diverse infectious diseases** that disproportionately affect populations living in poverty, primarily in **tropical and subtropical regions**.

- According to WHO, NTDs include 20 diseases and disease groups, such as **hookworm infection, lymphatic filariasis, and visceral leishmaniasis (kala-azar)**.

- ♦ **India** has the **world's largest absolute burden** of at least 10 major NTDs — hookworm, dengue, lymphatic filariasis, leprosy, kala-azar and rabies, ascariasis, trichuriasis, trachoma and cysticercosis.

- These diseases impose a devastating human, social, and economic burden on over one billion people worldwide.

Global Efforts

- WHO has been addressing NTDs since the late 1980s.
- The 2030 targets set in the 'Ending the Neglect' road map aim to reduce NTDs by 90% globally.
- However, progress has been slow, with 1.62 billion people still requiring interventions against NTDs in 2022.

Challenges and Complexities

- Slow post-COVID-19 recovery, funding uncertainties, geopolitical disruptions, climate change, gaps in knowledge, and insufficient data are major challenges.
- They have historically received less attention and fewer resources.
- They lead to other health problems such as anaemia, blindness, chronic pain, infertility and disfigurement.
- Lack of innovation for drugs, diagnostics, and vaccines remains a common problem.

Source: TH

SENSORINEURAL DEAFNESS

Context

- ♦ Recently, Singer Alka Yagnik reported Sensorineural Hearing Loss (SNHL), a rare hearing loss caused by viral infection.

About the Sensorineural Hearing Loss (SNHL)

- It is a common type of hearing impairment that results from damage to the inner ear structures or the auditory nerve.
- It can be **triggered by meningitis, mumps and measles**.

Causes

- **Loud Noises:** Prolonged exposure to loud sounds, such as traffic noise or music at high volumes, can lead to SNHL.
- **Ageing:** As we age, the delicate structures in the inner ear may deteriorate, causing gradual hearing loss.
- **Genetic Factors:** Some individuals may be genetically predisposed to SNHL.

Symptoms

- Gradual hearing loss over time.
- Difficulty understanding speech, especially in noisy environments.
- Ringing or buzzing sounds in the ears (tinnitus).

Source: IE