SHREYAS Scheme

Context: The "SHREYAS" umbrella scheme encompasses four central sector sub-schemes, and found a mention on PIB Website.

- SHREYAS is an umbrella scheme operated under the Ministry of Social Justice & Empowerment.
- The primary objective of SHREYAS is to empower OBC (Other Backward Class) and Economically Backward Class (EBC) students in the realm of education.
- This empowerment is achieved through the provision of fellowships, which offer financial assistance for pursuing quality higher education.
- Additionally, SHREYAS provides an interest subsidy on educational loans for students pursuing overseas studies.
- SHREYAS comprises four central sector sub-schemes aimed at achieving its educational empowerment goals.

Sub-Schemes

- **Free Coaching Scheme for SCs and OBCs:**
  - **Objective:** Provide high-quality coaching for economically disadvantaged SCs and OBCs.
  - **Income Ceiling:** Family income must be ≤ 8 lakhs per annum.
  - **Number of Beneficiaries:** 19,995 beneficiaries benefited from a total budget of 109.77 crore rupees.
  - **Period Covered:** From 2014-15 to 2022-23.
- **Top Class Education for SCs:**
  - **Objective:** Support the education of SC students by offering full financial assistance.
  - **Income Ceiling:** Family income must be ≤ 8 lakhs per annum.
  - **Number of Beneficiaries:** 21,988 beneficiaries benefited from a total budget of 398.43 crore rupees.
  - **Period Covered:** From 2014-15 to 2022-23.
- **National Overseas Scheme for SCs:**
  - **Objective:** Provide financial assistance for SC students pursuing masters and Ph.D. courses abroad.
  - **Income Ceiling:** Family income must be ≤ 8 lakhs per annum.
  - **Number of Beneficiaries:** 950 beneficiaries benefited from a total budget of 197.14 crore rupees.
  - **Period Covered:** From 2014-15 to 2022-23.
- **National Fellowship for SC Students:**
  - **Objective:** Offer fellowships for SC students pursuing M.Phil/Ph.D. degrees in various fields.
  - **Income Ceiling:** The income ceiling was not specified.
  - **Number of Beneficiaries:** Specific beneficiary numbers were not provided.
  - **Total Budget Allocation:** Specific budget allocation was not mentioned.
  - **Period Covered:** Specific time frame was not specified.

Critical Minerals and Clean Energy Summit

Context: The inaugural IEA Critical Minerals and Clean Energy Summit in Paris on September 28, 2023, focused on addressing the challenges and opportunities in meeting the rising demand for minerals for clean energy technologies.

- IEA's 2023 Critical Minerals Market Review noted a rapid growth, reaching $320 billion in 2022.
- A summit in Paris gathered leaders from 50 countries to discuss critical minerals' challenges and opportunities.
- Six main actions were agreed upon: diversify supplies, maximize technology and recycling, promote market transparency, improve information access, incentivize sustainable production, and enhance international cooperation.
- Demand for critical minerals has surged, e.g., a tripling of lithium demand and 70% increase in cobalt demand from 2017 to 2022.
- In a Net Zero scenario by 2050, critical mineral demand could reach 30 million tonnes.
- Recycling and technology play vital roles in reducing future supply constraints.
- New technology can cut energy and water needs in extraction and processing while improving resource efficiency.
- Lack of pricing transparency affects investments; IEA aims to strengthen market monitoring.
- A Ministerial Meeting hosted by IEA in February 2024 will assess global cooperation on energy security and climate change.

Critical Energy Minerals

- Clean energy technologies rely on critical minerals like copper, lithium, nickel, cobalt, and rare earth elements, which are essential for various applications, including wind turbines, electric vehicles, and electricity networks.
- Clean energy projects, such as solar PV plants, wind farms, and electric vehicles, typically require more critical minerals than traditional fossil fuel-based counterparts.
- An electric car requires six times the mineral inputs of a conventional car, and an offshore wind plant requires 13 times more minerals than a similarly sized gas-fired plant.
- The share of renewables in new investments has led to a 50% increase in the average amount of mineral resources needed for new power generation capacity since 2010.
- Different technologies require specific minerals; lithium, nickel, cobalt, manganese, and graphite are crucial for batteries, while rare earth elements are essential for wind turbines and electric vehicle motors.
- Demand for critical minerals has surged, with a tripling of lithium demand, 70% increase in cobalt demand, and 40% rise in nickel demand from 2017 to 2022.
- Investment in critical minerals development rose by 20% in 2021 and 30% in 2022, with a significant focus on lithium projects.
- Exploration spending increased by 20% in 2022, primarily driven by lithium exploration.
- Top producing countries for critical minerals include China, Australia, and the Democratic Republic of the Congo.

Critical Mineral	Associated Ores
Copper	Chalcopyrite, Bornite, Chalcocite, Cuprite
Lithium	Spodumene, Lepidolite, Petalite, Amblygonite
Nickel	Pentlandite, Garnierite, Millerite, Limonite
Cobalt	Cobaltite, Erythrite, Linnaeite, Smaltite
Rare Earth Elements	Monazite, Bastnäsite, Xenotime, Loparite
Graphite	Natural Graphite, Amorphous Graphite
Manganese	Pyrolusite, Rhodochrosite, Braunite
Aluminium	Bauxite
Tungsten	Scheelite, Wolframite
Zinc	Sphalerite, Smithsonite, Hemimorphite
Lead	Galena, Cerussite, Anglesite
Chromium	Chromite
Vanadium	Vanadinite, Carnotite, Magnetite
Titanium	Ilmenite, Rutile
Phosphorus (Phosphate)	Apatite, Phosphorite

R21/Matrix-M Vaccine

Context: The World Health Organization (WHO) has issued a recommendation for a new vaccine known as R21/Matrix-M to be used in the prevention of malaria in children.

- WHO recommends the R21/Matrix-M vaccine for preventing malaria in children.
- The recommendation follows advice from WHO's Strategic Advisory Group of Experts on Immunization (SAGE) and the Malaria Policy Advisory Group (MPAG).
- WHO also issued recommendations for new vaccines for dengue and meningitis, COVID-19 immunization schedules, and key immunization programmatic recommendations for polio and IA2030.
- R21 vaccine is the second WHO-recommended malaria vaccine, following RTS,S/AS01 vaccine recommended in 2021.
- Both vaccines are safe and effective in preventing malaria in children, with a significant impact on public health in regions like Africa.
- Demand for malaria vaccines is high, but supply of RTS,S is limited.
- Adding R21 to the recommended list is expected to improve vaccine supply, benefiting children in malaria-prone areas.

Features of R21 Vaccine

- **High Efficacy in Seasonal Transmission Areas**: In regions with seasonal malaria transmission (lasting 4-5 months per year), the R21 vaccine demonstrated a 75% reduction in symptomatic malaria cases over 12 months following a 3-dose series, with an additional fourth dose maintaining efficacy. This efficacy is comparable to the seasonal use of RTS,S.
- **Good Efficacy in Age-Based Schedule**: The vaccine showed good efficacy (66%) in the 12 months following the initial 3 doses, with a fourth dose maintaining efficacy when administered a year later.
- **High Public Health Impact**: Mathematical models project a significant public health impact for the R21 vaccine across various malaria transmission settings, including low-transmission areas.
- **Cost-Effectiveness**: Priced at US$2 to US$4 per dose, the R21 vaccine is cost-effective when compared to other recommended malaria interventions and childhood vaccines.
- **Similarity to RTS,S Vaccine**: While R21 and RTS,S vaccines have not been directly compared, there is no evidence suggesting one is superior to the other. The choice between them should consider programmatic factors, vaccine supply, and affordability.
- **Safety**: The R21 vaccine demonstrated safety in clinical trials, with ongoing safety monitoring, as is standard for new vaccines.

Table of differences between the various types of parasites that cause malaria

Plasmodium type	Type that causes malaria	Endemic area	Febrile seizures period	Involvement and severity
Falciparum	tropical malaria	In all endemic areas	Irregular Crisis	Very serious It can cause death if not treated quickly and effectively.
Vivax	tertian malaria	South America and Asia	Every 2 days	Grave, but with a delayed onset.
malariae	quartan malaria	South America and Asia	Every 3 days	Moderate, less frequently.
Ovale	tertian malaria	Africa	Every 2 days	Moderate, less frequently.

Malaria

- Malaria is a life-threatening disease caused by plasmodium parasites.
- It is mainly found in tropical and subtropical regions of Africa, South America, and Asia.
- Transmission occurs through mosquito bites and is preventable and treatable.
- Infected female Anopheles mosquitoes spread the malaria parasites.
- The parasites multiply in the liver and then attack Red Blood Cells (RBCs), causing them to rupture.
- There are five parasite species causing malaria in humans, with Plasmodium falciparum and Plasmodium vivax being the most dangerous.
- Symptoms include fever, flu-like illness, chills, headache, muscle aches, and fatigue.
- The RTS,S or Mosquirix vaccine, developed by GlaxoSmithKline (GSK) and approved in 2015, is effective in reducing the risk of malaria by nearly 40%.
- The vaccine targets the deadliest malaria parasite species, Plasmodium falciparum, and trains the immune system for protection.
- **Disease Burden**:
  - **Malaria deaths in high-burden countries**: 619,000 in 2021, down from 625,000 during the first year of the COVID-19 pandemic but higher than the pre-pandemic level of 568,000 in 2019.
  - **Malaria cases**: 247 million in 2021, up from 245 million in 2020 and 232 million in 2019.

- **High-burden countries**: Five out of 11 recorded fewer malaria deaths but still contributed significantly to the global burden.
- **Control tools**: Insecticide-treated bednets (ITNs) and Intermittent Preventive Treatment in Pregnancy (IPTP) were key tools used.
- **Hurdles in ending malaria**: Challenges include mutating parasites, drug resistance, and urban-adapted mosquitoes, particularly in Africa.
- Need for new tools and funding to combat malaria urgently.

Initiatives to tackle Malaria

- **Global:**
  - WHO identifies 25 countries with potential to eradicate malaria by 2025 in its 'E-2025 Initiative.'
  - WHO's Global technical strategy for malaria 2016–2030 aims to reduce malaria cases and mortality rates by at least 40% by 2020, 75% by 2025, and 90% by 2030 compared to 2015 levels.
- **India-Specific:**
  - India initiated malaria elimination efforts in 2015, intensified after launching the National Framework for Malaria Elimination (NFME) in 2016 by the Ministry of Health and Family Welfare.
  - NFME aligns with WHO's 2016-2030 Malaria Strategy.
  - National Strategic Plan for Malaria Elimination (2017-22) launched in July 2017 with year-wise elimination targets based on malaria endemicity.
  - High Burden to High Impact (HBHI) initiative launched in four states (West Bengal, Jharkhand, Chhattisgarh, and Madhya Pradesh) in July 2019.
  - Distribution of Long Lasting Insecticidal Nets (LLINs) in high burden areas reduced endemicity in these states.
  - Indian Council of Medical Research (ICMR) established Malaria Elimination Research Alliance-India (MERA-India) to coordinate partners working on malaria control.

NEWS IN BETWEEN THE LINES

Badis Limaakumi

About Badis Limaakumi:

- Badis limaakumi is a newly discovered fish species recently found in the **Malak River** in **Nagaland**.
- It is locally known by various names, including "**Tepdang**," "**Akngashi** (**Chungli**)," "**Aokngatsü** (**Mongsen**)" and "**Sempi**."
- This species undergoes a **remarkable color change** when placed in an aquarium or different environments, appearing black in its natural habitat.

Physical Features: Badis limaakumi has a relatively **large** and **slender** body. It **lacks blotches** on its sides and fins, as well as on the **cleithrum** and possesses a large number of **lateral-line scales**.

About the Badis Species:

Genus: Badis species belong to the genus of **small freshwater fish** known as **Badidae**.

Distribution: They inhabit the **Ganges**, **Brahmaputra**, **Mahanadi** and **Indus** river basins.

Number of Species: Around **25 Badis** species are recognized, with **15 found in India**.

Sammakka-Sarakka

Recently, the **Prime Minister of India** (Narendra Modi) has announced that the **Central Tribal University** will be established soon in **Mulugu** district, **Telangana**.

Tribal Goddesses' Names: It is named after the tribal goddesses **Sammakka** and **Sarakka**.

Historical Significance:

Sammakka and Sarakka: These tribal goddesses, **a mother-daughter duo**, played a pivotal role in the **12th century** by opposing tax imposition on tribal people **during drought** conditions by the **Kakatiya rulers**.

Cultural and Religious Significance:

Sammakka Saralamma Jathara: This event is the **largest tribal religious congregation** in the country and is celebrated biennially (**every two years**) in Telangana.

Kalakkad-Mundanthurai Tiger Reserve

Location: It is located in the **Southern Western Ghats**, spanning **Tirunelveli** and **Kanyakumari** districts of **Tamil Nadu**.

Establishment: It was designated as a Tiger Reserve in **1988**.

Composite Reserve: It comprises **three** main sanctuaries: **Kalakad** Sanctuary, **Mundanthurai** Sanctuary and a portion of **Kanyakumari** Sanctuary.

Agastya Malai Hill Range: The core area of the sanctuary lies within the **Agastya Malai Hill** Range, which is part of one of the **world's 18 biodiversity hotspots**.

Vegetation: It varied, ranging from **thorny shrub** jungles to lush **evergreen** forests. The reserve also includes savannah **woodlands**, **grasslands** and **tea** and **coffee** plantations.

Flora: Some notable plant species include **Sarcandra**, **Paphiopedulum druryi**, Hopea parviflora, **Hopea utilis**, **Calophylum elatum**, Cullenia exarillata, among others.

Fauna: Tigers, **leopards**, **wild cats**, wild dogs, sloth bears, **elephants**, gaurs, deer species, primates like langurs and **macaques** and more are found here.

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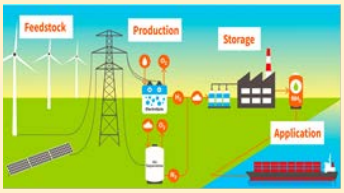
Current affairs summary for prelims

04 October, 2023

Green Ammonia



What is Green Ammonia?

- Green ammonia is ammonia that is produced using **100% renewable** and **carbon-free energy** sources.
- Green ammonia is **produced through water electrolysis** to obtain **hydrogen (H)** and by separating **Nitrogen(N)** from the air.
- These components are then used in the **Haber process**, powered by sustainable electricity, to create **ammonia (NH3).**

Applications: It is used as fuel for **locomotives**, **ships**, **electricity generation** and in **fertilizer** production.

Ammonia Characteristics: Colorless gas, **sharp odor**, easily **dissolves in water** and can form a clear liquid under pressure.

Space Junk

Recently, the **US government** has issued its **first-ever fine** to a company for leaving space junk in Earth's orbit.

What is Space Junk?

Space junk (space pollution) also known as **space debris**, includes **old satellites** and **parts of spacecraft** that remain in **Earth's orbit** but are no longer operational.

Collision Risk: Space junk poses a risk of **collision** with **operational satellites** in Earth's orbit.

Regulatory Action: The **FCC** (Federal Communica tions Commission) took regulatory action because **Dish's satellite** posed a potential risk to other satellites at its current altitude.

Space Debris Statistics:

Satellite Count: Over **10,000 satellites** have been launched into space since **1957**, with over half of them now defunct.

Space Debris Quantity: NASA (National Aeronautics and Space Administration) estimates that there are more than **25,000** pieces of space debris measuring over **10cm** in length.

Safety Concerns: Space junk poses serious safety concerns, including risks to **astronauts** and **spacecraft**, necessitating measures like repositioning the International Space Station to avoid collisions.

Fine Recipient: Dish Network was fined **$150,000 (£125,000**) by the Federal Communications Commission (**FCC**).

Place in News

Scarborough Shoal

Recently, in the South China Sea, an "unidentified commercial vessel" collided with a Filipino fishing boat near Scarborough Shoal.

Location: Scarborough Shoal, also known as **Huangyan Island**, is a disputed territory in the **South China Sea**.

Geographical Coordinates: Approximately 220 kilometers from **Luzon**, **Philippines**.

Disputed Territory: Claims by the Republic of the Philippines, People's **Republic of China** and **Republic of China (Taiwan**).

Historical Claims:

- Philippines asserts sovereignty based on historical records, including a **1734 map**.
- **Arbitration Case:** Philippines initiated **arbitration** proceedings against China's claims in **2013** under **UNCLOS**.
- **Arbitration Tribunal Decision (2016**): Ruled in favor of the Philippines, rejecting China's historic rights claim.
- **Post-Arbitration Developments:** China verbally allowed **Filipino fishermen** access, with visible reef damage reported in **2018**.

POINTS TO PONDER

- **Who is the first Asian man to be nominated for International Tennis Hall of Fame?** - Leander Paes
- **Which state is associated with the 'Mukhyamantri Gramin Awas NYAY Yojana'?** - Chattisgarh
- **According to the Caste Census of Bihar, what is the percentage of non-General Category people in Bihar?** - 84.48%
- **Which institution has issued AAA rated social bonds to raise over ₹1000 Crores?** - NABARD
- **Which institution compiles the Statistical Performance Index?** - World Bank