

Current Affairs - 20 February 2026

GPUS EXPLAINED: THE POWERHOUSE BEHIND AI

In 1999, Nvidia introduced the **GeForce 256** as the world's **first** GPU, designed primarily to enhance video game graphics and performance.

GPU: Understanding the Basics

- A Graphics Processing Unit (GPU) is a specialised processor designed to perform many simple calculations simultaneously.
- Unlike a Central Processing Unit (CPU), which handles fewer but more complex tasks quickly and efficiently, a GPU excels at parallel processing—handling large volumes of repetitive computations at once.
- **Why GPUs Are Ideal for Graphics?**
 - Rendering images on a screen requires updating millions of pixels multiple times per second.
 - For example, a 1920×1080 display has over 2 million pixels per frame, and at 60 frames per second, more than 120 million pixel updates are required every second.
 - Each pixel's colour depends on lighting, texture, shadows, and object properties.
 - Since the same calculations are repeated across pixels, GPUs are better suited than CPUs for this kind of workload.
- **Parallel Processing Made Simple**
 - A GPU can be imagined as a large team of workers, each handling a small portion of a task simultaneously.
 - While each GPU core is less powerful than a CPU core, the GPU contains hundreds or thousands of such cores.
 - This allows it to process large, repetitive workloads far more quickly than a CPU working alone.

Current Affairs - 20 February 2026

Where Is the GPU Located?

- **The GPU as a Silicon Chip** - A GPU is built on a silicon die — a flat piece of semiconductor material measured in square millimetres. Like a CPU, it is a physical chip mounted inside a computing device.
- **Dedicated Graphics Card Setup** - In systems with a separate graphics card, the GPU die sits beneath a metal heat sink at the centre of the card. It is surrounded by VRAM chips and connects to the motherboard through a high-speed interface.
- **Integrated Graphics in Modern Devices** - In laptops and smartphones, the GPU is often integrated with the CPU on the same die.

GPUs Vs CPUs

- GPUs are not fundamentally smaller than CPUs. Both use similar silicon transistors and advanced fabrication nodes (e.g., 3–5 nm).
- The difference lies in microarchitecture — how transistors are organised and used.
- CPUs dedicate more die area to complex control logic, cache, and decision-making features. GPUs allocate more space to repeated compute units and wide data paths, enabling parallel processing.

How Much Energy Do GPUs Consume?

- **Energy During Training** - In a scenario using four Nvidia A100 GPUs (250 W each) for 12 hours of neural network training, total energy consumption would be about 12 kWh, as the GPUs run near full capacity.
 - **Energy During Inference** - Once deployed, if one GPU handles predictions, energy use drops to roughly 2 kWh for inference.
 - **Total System Consumption** - Including additional server components (CPU, RAM, storage, cooling), total daily power use can reach around 6 kWh when running continuously, accounting for 30–60% overhead.
 - **Real-World Comparison** - This is comparable to running an air conditioner for 4–6 hours, a water heater for 3 hours, or 60 LED bulbs for 10 hours daily.
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NATIONAL COMMISSION FOR SCHEDULED TRIBES



- It is a constitutional body established by amending Article 338 and inserting a new Article 338A.
- **Historical Evolution:**
 - The NCST's establishment is rooted in the **Constitution (89th Amendment) Act, 2003.**
 - Prior to this amendment, the National Commission for Scheduled Castes and Scheduled Tribes was a combined entity.
 - The separation into two distinct Commissions-NCSC and NCST-occurred in
- **Headquarters:** New Delhi
- **Composition of National Commission for Scheduled Tribes**
 - **Chairperson:** Holds the rank of a **Union Cabinet Minister.**
 - **Vice-Chairperson:** Holds the rank of a **Minister of State.**
 - **Members:** Their ranks are equivalent to that of a **Secretary to the Government of India.**
 - The terms of office for these **positions are three years** from the date of assuming charge.
- **Functions of National Commission for Scheduled Tribes**
 - To monitor safeguards provided for STs under the Constitution or under other laws;
 - To inquire into **specific complaints relating to Rights & Safeguards of STs;**
 - To **advise in the Planning Process** relating to Socio-economic development of STs;
 - To **submit report to the President annually** and other times on welfare Measures required related to Socio-economic development of STs;
 - To discharge such other functions in relation to **STs as the President may by rule specify.**



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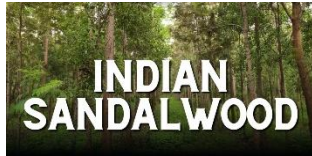
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Current Affairs - 20 February 2026

INDIAN SANDALWOOD



According to a recent report by the sandalwood development committee (SDC) set up by the Union Government, globally, the estimated annual demand for sandalwood stands at 5,000 to 6,000 tonnes.

- Santalum album L. (Santalaceae) commonly known as **Indian Sandalwood** is one of the oldest and precious sources of natural fragrance.
- It is known by the name "**Chandan**" and "**Srigandha**" in India.

Required Climatic Conditions for Indian Sandalwood

- **Soil:** Sandalwood grows better in slight alkaline condition soil PH Range between 6.7. to 7.5.
- **Climate:** It thrives in hot and humid climate.
- The ideal temperature for the growth of Sandalwood is between 12 degrees Celsius to 35 degrees celsius.
- It requires good drainage and **does not stand water logged ground.**
- It is a **long-duration crop, taking nearly 20 years** to develop quality heartwood, which is the primary source of sandalwood oil.
- It **freely produces seed** and **natural regeneration occurs both via seedlings** and through root suckers after trees have been uprooted.
- **Uses:** Sandalwood and its essential oils have very high commercial values because of its use in aromatherapy, **soap industry, perfumery, cosmetics, and pharmaceuticals.**
- **Major Sandalwood Growing States:** It is mostly grown in Karnataka, Andhra Pradesh, Gujarat, Bihar, Telangana, Madhya Pradesh, Maharashtra, and Tamil Nadu in India.
- **Reasons for decline in sandalwood production:** Illegal logging and smuggling, habitat loss due to deforestation, **slow growth and long maturation cycle, pests and diseases.**

Current Affairs - 20 February 2026

GOLD RUSH: HOW INDIA'S PRECIOUS METAL CRAZE IS STRAINING THE ECONOMY

Indian households are diversifying their savings, with investments in mutual funds and equities rising sharply — from 7% of financial assets in 2022–23 to 15% in 2024–25 — while bank deposits declined slightly. However, the long-standing preference for gold remains strong.

Gold imports surged to \$12.07 billion in January, nearly tripling from December. A growing channel for this investment is gold exchange-traded funds (ETFs), reflecting the increasing financialisation and formalisation of household savings, even as it adds to gold import pressures.

Gold ETFs: From Niche Product to Investment Wave

- Gold ETFs function like mutual funds that invest in gold. They offer advantages over physical gold—no concerns about purity, storage, or security, and the flexibility to invest in small amounts.
- The fund handles gold purchases based on investor inflows.
- **Speculation and Economic Concerns**
 - Analysts suggest the surge may reflect large-scale speculation in precious metals.
 - While it may represent a shift from physical gold demand, concerns remain that heavy investment in gold—financial or physical—effectively amounts to capital moving out of the domestic economy.

Sovereign Gold Bonds: A Policy Experiment

- Launched in 2015, Sovereign Gold Bonds (SGBs) offered returns linked to gold prices plus 2.5% annual interest.
- Indians invested in bonds equivalent to 147 tonnes of gold worth ₹72,274 crore, reducing the need for physical imports.
- Rising gold prices made the scheme costly, with annual payouts nearing ₹18,000 crore. The government discontinued SGBs in early 2024 due to mounting fiscal pressure.



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Renewed Concerns Over Gold Investments

- Although inflation is currently moderate, geopolitical tensions, policy uncertainty, and uneven global stock market gains have renewed interest in gold as a safe haven.
 - A January spike in gold ETF-driven imports pushed India's goods trade deficit close to \$35 billion, highlighting macroeconomic risks.
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VIBRANT VILLAGES PROGRAMME-II



- It is a **Central Sector Scheme**.
 - It is designed to ensure **comprehensive and sustainable development** of border villages through a saturation-based and convergence-driven approach.
 - **Objective:** To create better **living conditions and adequate livelihood opportunities** to ensure prosperous and safe borders, **control trans-border crime** and assimilate the border population with the nation.
 - **States Covered:** It is implemented in select strategic villages in the States/UTs of Arunachal Pradesh, Assam, Bihar, Gujarat, J&K, Ladakh, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.
 - **Key Features of Vibrant Villages Programme-II:**
 - It shall provide funds for **infrastructure development** within the village or a cluster of villages like education infrastructure like SMART classes, development of tourism circuits.
 - It **focuses on value chain development** through cooperatives, SHGs, etc to create diverse & sustainable livelihood opportunities in the border areas.
 - It **emphasizes enhancing vibrancy** in these villages by organizing activities including fairs & festivals, awareness camps, celebration of National days.
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TRANSITIONING TO GREEN STEEL

- India's path to achieving **net-zero emissions** by **2070** will significantly depend on scaling up the production and consumption of green steel, given that the steel sector is one of the country's largest industrial sources of emissions.
- Recognising this, the Ministry of Steel formed **14 task forces** comprising industry leaders and technical experts to chart decarbonisation pathways and develop a roadmap for accelerating low-carbon steel production.
- However, a major challenge identified was the "**green premium**" — the higher upfront cost of producing green steel.
- Manufacturers face financial constraints in transitioning to cleaner technologies.
- To address this, the roadmap emphasises the need for targeted fiscal support in the initial years, including GST rationalisation and time-bound incentives, to ease the burden on producers and facilitate the shift toward sustainable steel production.

Green Steel Premium: A Manageable Cost for Strategic Gains

- **Limited Impact on Public Infrastructure Costs**
 - Although green steel carries a premium, its overall impact on infrastructure budgets is modest.
 - Steel makes up about 18% of large public projects. Even with a 30% premium and exclusive public-sector use, overall project costs would rise by roughly 5.5%.
- **Strategic and Economic Rationale**
 - The incremental cost is viewed as manageable, particularly as a safeguard for national economic security.
 - India faces pressure from the EU's Carbon Border Adjustment Mechanism and heavy reliance on imported coking coal, exposing the economy to price volatility.
 - Green steel can help avoid carbon tariffs and reduce vulnerability to fossil fuel shocks.

Current Affairs - 20 February 2026

- **Lessons from Global Models**

- International examples offer guidance. Japan's Green Purchasing framework combines procurement mandates with fiscal incentives to support industry transition.
- California's Buy Clean model uses strict carbon benchmarks and verified disclosures to ensure traceability and accountability.

- **India's Green Steel Framework**

- India has introduced a **Green Steel Taxonomy** featuring a 3, 4, and 5 star rating system based on emission intensity, providing transparency through a carbon "nutrition label."
- The Ministry has initiated steps to embed green steel procurement mandates, but final approval is pending due to concerns over costs and verification mechanisms.

Bridging the Trust Gap in Green Steel Procurement

- **Strengthening Verification and Transparency**

- A key barrier to green steel adoption is the lack of reliable verification.
- Procurement officers currently cannot easily distinguish certified green steel from conventional products.
- Integrating **Green Star ratings** into the existing Made in India **QR code system**, alongside Quality Council of India accreditation, can enable instant carbon credential verification.

- **Phased Standards and Pilot Implementation**

- While a 3-star benchmark offers an entry point, policy should gradually shift toward 4 and 5 star standards post-2030 to encourage deeper decarbonisation.
 - Launching pilot projects through large public buyers like Indian Railways can create a practical testing ground.
 - Coordinated action among the Ministries of Steel, Finance, and Environment will be crucial to link climate goals with procurement and fiscal policy.
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SALEM SAGO



Salem Sago

Recently, the Agricultural and Processed Food Products Export Development Authority (APEDA) facilitated the export of 0.5 MT of GI-tagged Salem Sago from Salem, Tamil Nadu to Canada.

- It is locally known as Javvarisi in Tamil Nadu, is a starch-based food product extracted from tapioca roots.
- Sago is derived from raw tapiocas.
- It is in the form of small hard globules or pearls and is pearl white in colour.
- It is manufactured from the wet starch powder crushed from tapioca roots.
- The wet starch powder is used for producing sago and the dry powder has been used as a raw material for industrial purposes.
- In 2023 Salem Sago secured a Geographical Indication (GI) tag.
- Uses: Sago is used in various industries, including food, paper, construction, textile, cosmetic, pharmaceutical, mining, and alcohol, among others.

Key Facts about Tapioca

- It is a major horticulture crop cultivated in Tamil Nadu.
- Required Climatic Conditions for Tapioca
 - Soil: Any well drained soil preferably red lateritic loamy soil.
 - Climate: It thrives best in tropical, warm humid climate
 - Rainfall: Well distributed rainfall of over 100 cm per annum.
 - This crop can be cultivated upto an elevation of 1000 m.