India Cold Chain Conclave

Context: The NCCD's Innovative Cold Chain Conclave in the Himalayas lays the groundwork for Jammu and Kashmir's economic growth.

- Ministry of Agriculture and Farmers Welfare, led by NCCD, organized India Cold Chain Conclave in Jammu and Kashmir.
- Focus on sustainable cold chain development in the Himalayan region.
- Importance of energy-efficient and environmentally conscious cooling solutions emphasized.
- NCCD pledged ongoing support to cold chain stakeholders.
- Success attributed to support from partners like JKPICCA, Directorate of Horticulture, BEE, and ISHRAE.

What is Cold Chain?

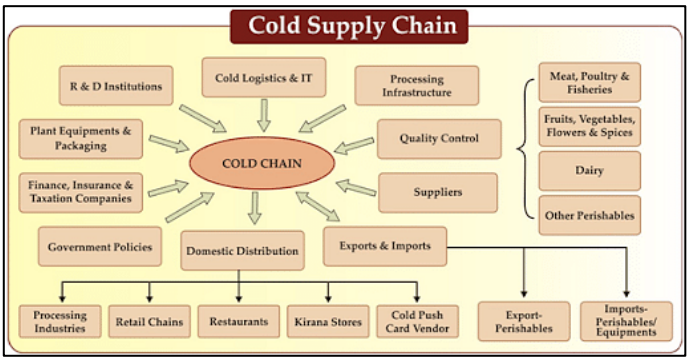
- A cold chain is a temperature-controlled supply chain with refrigerated facilities and equipment to maintain specific low temperatures.
- It's crucial for products like vaccines that require a precise temperature range from production to use.
- Even brief temperature deviations can render vaccines ineffective and unusable.

Integrated Cold Chain and Value Addition Infrastructure

- The "Integrated Cold Chain and Value Addition Infrastructure" initiative's primary goal is to establish a seamless cold chain network from the farm to the consumer, ensuring fair prices for farmers and year-round availability of food products.
- Eligible entities such as Partnership/Proprietorship Firms, Companies, Corporations, Cooperatives, Self Help Groups (SHGs), Farmer Producer Organizations (FPOs), NGOs, Central/State PSUs, and others can participate in this scheme if they meet the eligibility criteria outlined in the scheme guidelines.
- The scheme encompasses a wide range of infrastructure facilities across the entire supply chain, including pre-cooling, weighing, sorting, grading, and waxing facilities at the farm level, as well as multi-product/multi-temperature cold storage, CA storage, packing facilities, IQF (Individual Quick Freezing), blast freezing at distribution hubs, and reefer vans and mobile cooling units for the distribution of various products such as non-horticulture, horticulture, fish/marine (except shrimp), dairy, meat, and poultry.
- The scheme offers flexibility in project planning and places a special emphasis on the development of cold chain infrastructure at the farm level.
- This scheme has been in implementation since 2008 and is being executed under the supervision of the Ministry of Food Processing Industries.
- Financial support, in the form of grant-in-aid, is available for qualified projects, with a maximum limit of Rs. 10 crores per project, to facilitate the establishment of cold chain infrastructure across the country.

Jharia Master Plan

Context: The efforts of the Coal Ministry have reduced the number of surface fire sites identified from 77 to 27 in the Jharia Master Plan area.



- Coal mining in Jharia Coalfield began in 1916, marked by unscientific practices and a profit-driven approach.
- In 1978, a Polish team and Indian experts studied the coal fires in Jharia.
- Investigations identified 77 fires across 41 collieries of BCCL (Bharat Coking Coal Limited).
- A High-Power Committee was formed in 1996 to address these issues.
- Comprehensive Master Plans were created in 1999 and updated in 2004, focusing on fire management and rehabilitation.
- Approval of Jharia Master Plan (JMP):
  - The Jharia Master Plan was approved in 2009 with an implementation period of 10 years and an estimated investment of Rs. 7112.11 crores.
  - The plan covered 595 sites for rehabilitation, encompassing 25.70 square kilometers.

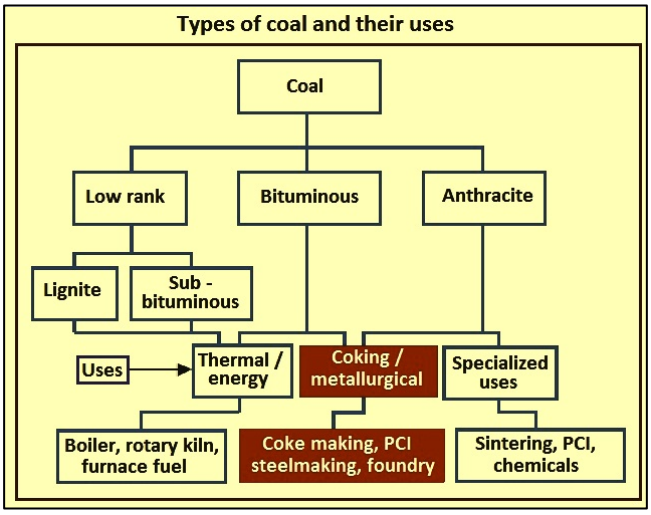
Coal

- Coal is a fossil fuel found in sedimentary rocks and is often referred to as 'Black Gold.'
- It is a conventional energy source used in domestic heating, industrial processes like iron and steel production, steam engines, and electricity generation (known as thermal power).
- Leading global coal producers include China, the United States, Australia, Indonesia, and India.
- In India, coal is primarily found in two types of fields: **Gondwana Coal Fields (approximately 250 million years old) and Tertiary Coal Fields (15 to 60 million years old).**
  - Gondwana coal accounts for 98% of India's coal reserves and 99% of its coal production. It is of high quality and is located in regions like Damodar, Mahanadi, Godavari, and Narmada valleys.

- Tertiary coalfields, found mainly in extra-peninsular regions, have lower carbon content but higher moisture and sulfur levels. Key areas include Assam, Meghalaya, Nagaland, Arunachal Pradesh, Jammu and Kashmir, Darjeeling in West Bengal, Rajasthan, Uttar Pradesh, and Kerala.

Coal Production in India:

- India is the second-largest coal producer globally, following China.
- In the fiscal year 2020-21, coal production in India was 716.08 million metric tons, a 2.02% decline primarily due to COVID-19 disruptions.
- Lignite production was 36.61 million metric tons in the same period, down by 13.04% from the previous year.
- Coal production had a compound annual growth rate (CAGR) of 3.19% over the last decade, while lignite production declined by a CAGR of 1.60%.
- India aims to increase coal production to 1,200 million metric tons by 2023-24.
- The carbon content in Indian coal is low, and toxic trace elements are negligible.
- The Gross Calorific Value (GCV) of Indian coal averages around 4500 Kcal/kg, whereas it is higher in many other countries like Australia, where it is approximately 6500 Kcal/kg.



Coal Consumption in India:

- India is one of the largest consumers of coal globally, with a consumption of 906.08 million metric tons in 2020-21.
- Approximately 79.03% of coal consumed was produced domestically.
- Coal consumption grew at a CAGR of 3.96% over the last decade.
- Due to high demand and lower domestic coal quality, India imports high-quality coal for industries like steel production.
- In 2020-21, India imported 215.25 million metric tons and exported 2.95 million metric tons of coal.

Electricity Generation from Coal:

- In 2020-21, coal accounted for over 73% of India's electricity generation, while lignite contributed 3.6%.
- The electricity sector was the largest consumer of coal in India, making up 64.07% of total coal consumption in 2020-21.
- Other significant consumers include the steel, sponge iron, cement, fertilizers, chemicals, paper, and textile industries.
- Coal-fired power plants are a major source of electricity generation in India, but transitioning to renewables has been proposed due to cost considerations.

Galactic Tides

Context: Scientists have noted that the Andromeda galaxy is moving in the direction of the Milky Way and have identified tidal streams along its periphery.

- Galaxies experience tides due to gravitational forces, affecting their evolution.
- Tidal forces reshape galaxy structures, promote star formation, and disrupt smaller star systems.
- They also alter star orbits over long periods and influence galaxy interactions.
- Tidal streams near Andromeda suggest devoured dwarf galaxies.
- Galactic tides impact supermassive black holes and their interactions with stars.
- Understanding galactic tides is crucial for studying galaxy dynamics and evolution.

What are Galactic Tides?

- Galactic tides are gravitational forces experienced by objects within a galaxy like the Milky Way.
- They are of interest in scenarios such as galactic collisions, dwarf galaxy disruption, and the Milky Way's impact on the Solar System's Oort cloud.
- Galactic collisions between large galaxies result in visible tidal tails due to the gravitational gradient.
- Satellite galaxies near larger galaxies are highly influenced by tidal forces, affecting their structure, motions, and star formation.
- Tidal stripping can lead to star and gas loss from satellite galaxies, possibly inducing star formation in remaining core regions.
- A dwarf satellite galaxy may eventually be completely disrupted, forming a tidal stream of stars and gas around its parent galaxy.
- Galactic tides also affect star and planetary system formation within galaxies, particularly at the outer reaches where a star's gravity is weaker.
- The Milky Way's gravitational field influences the Oort cloud, potentially stretching and deforming it, leading to the dislodging of planetesimals and the formation of comets.
- The galactic tide may contribute to the formation of an Oort cloud by altering planetesimal orbits.
- Cumulatively, the galactic tide can significantly impact the origin of comets from the Oort cloud.

Roche Limit

- The Roche limit, also known as the Roche radius, is a concept in celestial mechanics.
- It defines the distance from a celestial body where a second celestial body, held together primarily by its own gravity, will break apart due to tidal forces from the first body.
- Inside the Roche limit, orbiting material disintegrates and forms rings around the first body.
- Conversely, outside the Roche limit, material tends to come together and coalesce.
- The Roche radius is determined by the radius of the first celestial body and the ratio of the densities of the two bodies involved.

Oort Cloud

- The Oort cloud, also known as the Öpik–Oort cloud, is a theoretical concept in astronomy.
- It is believed to be a vast collection of icy planetesimals that surrounds the Sun.
- The Oort cloud is located at extremely distant distances from the Sun, ranging from 2,000 to 200,000 astronomical units (AU), equivalent to 0.03 to 3.2 light-years.
- The concept of the Oort cloud was first proposed in 1950 by Dutch astronomer Jan Oort, and it was named in his honor.
- The primary role of the Oort cloud is to act as a source of long-period comets that periodically enter the inner Solar System.
- There are two main regions within the Oort cloud: the inner Oort cloud, which is disc-shaped and aligned with the solar ecliptic (Hills cloud), and the outer Oort cloud, which is spherical and envelops the entire solar system.
- Both regions of the Oort cloud are located far beyond the heliosphere and exist in interstellar space.
- In comparison to other reservoirs of trans-Neptunian objects like the Kuiper belt, scattered disc, and detached objects, the Oort cloud is located at significantly greater distances from the Sun.

NEWS IN BETWEEN THE LINES

Nari Adalat

About Nari Adalat:

- Nari Adalat is part of the **Mission Shakti** program, which falls under the **Ministry of Women and Child Development**.
- Its primary goal is to provide women with an **alternate Grievance Redressal Mechanism** for resolving **petty nature cases** such as harassment and rights violations.
- Nari Adalat operates at the **Gram Panchayat level**, making it accessible to local communities.
- It serves as a platform for **awareness generation** about women's issues and collects **public feedback** for scheme improvement.
- It contributes to ensuring the **effective delivery of public services** for women's welfare and empowerment.

Tiwa Tribe

About Tiwa Tribe:

The Tiwa tribe, also known as the **Lalung**, primarily resides in the northeastern states of **Assam** and **Meghalaya**, with smaller populations in **Arunachal Pradesh**, **Manipur** and **Nagaland**.

Recognition: The Tiwa people are recognized as a **Scheduled Tribe** within the **state of Assam**.

Sub-Groups: The Tiwa tribe is divided into two sub-groups: **Hill Tiwa** and **Plains Tiwas**, each with distinct cultural characteristics.

Livelihood: The Tiwas practice Jhum or shifting cultivation.

Festivals: The Tiwa tribe celebrates several festivals, including **Three Pisu**, **Bihu**, **Borot Utsav**, **Sogra Phuja**, **Wansuwa**, **Jonbeel Mela**, **Kabla Phuja**, **Langkhon Phuja** and **Yangli Phuja**.

Wanchuwa Festival: The Wanchuwa festival is a significant celebration for the Tiwa, **marking a successful harvest**.

Yangli Festival: The Yangli festival holds great cultural importance as it revolves around prayers and traditional dances, **emphasizing the tribe's reliance on farming**.

World Coffee Conference

India recently hosted the 5th World Coffee Conference (WCC) for the first time in Asia, held in Bengaluru.

Establishment: It was established in 1963 under the auspices of the United Nations to elevate the economic importance of coffee worldwide.

Previous Editions: The earlier editions of the World Coffee Conference were held in various locations, including London (2001), Brazil (2005), Guatemala (2010) and Ethiopia (2016).

Mascot: Coffee Swami

Theme: "Sustainability through Circular Economy and Regenerative Agriculture"

Organizers: The event was jointly organized by the **Coffee Board, the Ministry of Commerce and Industry**, and **the International Coffee Organisation (ICO),** with the active support of various stakeholders.

Coffee Export: India's coffee exports are valued at **over $1 billion**, with expectations of a **10-15%** growth due to the WCC.

Coffee Production: India primarily cultivates **Robusta** and **Arabica coffee** varieties, with **Karnataka** being the largest producer, followed by **Kerala**, **Tamil Nadu** and **Andhra Pradesh**.

World Coffee Market: Brazil remains the largest coffee-producing country globally and India exports coffee to several countries, including the **US**, **Germany**, **France**, **Russia** and more.

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Current affairs summary for prelims

26 September, 2023

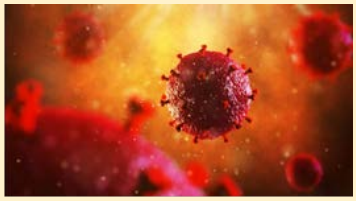
Global Maritime India Summit

The Global Maritime India Summit (GMIS) is a significant international event in the maritime sector organized by the Ministry of Ports, Shipping and Waterways.
Third Edition: The third edition of GMIS is scheduled to be held on **October 17-19, 2023**, at **Pragati Maidan**, New Delhi.
Objective: Its aims is to create an international market for key **decision-makers** and **industry leaders**, provide opportunities **for start-ups** and **researchers**, showcase the latest **maritime technology** and **promote Ease-of-Doing-Business** in the maritime sector.
Significance: It serves as a platform to enhance **trade between nations**, celebrate achievements in the **maritime sector** and facilitate **industry-academia interaction** for accessing skilled manpower.

CE20 E13 Engine

ISRO has recently accomplished the **CE20 E13 engine hot test** at the ISRO Propulsion Complex in **Mahendragiri**.
Engine Role: The CE20 engine plays a pivotal role as the powerhouse of the **Cryogenic Upper Stage** (**CUS**), propelling the **upper stage (C25)** of the **LVM3** launch vehicle.
Proven Performance: The CE20 engine has already proven its worth, operating at a **thrust level of 19 tonnes** in six successive LVM3 missions and **two OneWeb** commercial missions.
Higher Thrust: As part of the upgrade, the CE20 engine will be modified to operate at a **higher thrust level of 22 tonnes,** enhancing overall performance.
Upcoming Milestone: The Gaganyaan program's **Test Vehicle D-1/Crew** Escape System mission is **scheduled for October**, marking a significant step in **India's human spaceflight endeavors**.

ciTRAN Virus



About ciTRAN Virus:

- Recently the researchers at the **Indian Institute of Science Education and Research (IISER)** in **Bhopal** have identified a **Circular RNA virus, ciTRAN**, whose role in **HIV-1 virus** replication was previously unclear.
- Circular RNA plays a crucial role in **regulating gene expression** and is essential for various **biological processes**.
- Understanding how **ciTRAN modulates HIV-1** transcription could lead to the development of novel drugs and therapies to combat HIV-1, as reported in the journal Science Advances.
- Researchers used a customized protocol involving direct **RNA nanopore sequencing** (**circDR-Seq**) to capture **circRNAs** from **HIV-1-infected T cells** and identified **ciTRAN**.
- HIV-1 infection induces ciTRAN expression in a **Vpr-dependent manner** and ciTRAN interacts with **serine/arginine-rich splicing factor 1 (SRSF1)**, known to repress HIV-1 transcription.
- HIV-1 appears to **hijack ciTRAN**, which is typically altered during **immunological signaling**, **inflammation** and **viral infection**.

Place in News

Argentina

Argentina (Capital: Buenos Aires)

Location: Argentina is located in the southern half of **South America** and is the **second-largest country** on the continent after **Brazil**.
Political Boundaries: Argentina shares its borders with several countries, including **Chile**, **Bolivia**, **Paraguay**, **Brazil** and **Uruguay**.
Geographical Features: The country features diverse geography, including the famous **Andes Mountains** running along its western border, which are **known for hosting lithium-rich brine deposits**.
Lithium Production: Argentina is part of the **"Lithium Triangle"** along with **Chile** and **Bolivia** and is a significant producer of lithium, holding the **world's third-largest lithium reserve**.
International Relations: Argentina is a member of the **United Nations** and the **G20**.

POINTS TO PONDER

- **Which Indian armed force conducted the 'Operation Sajag' drill?** - Indian Coast Guard
- **Which state launched 'Mobile Van Program' to promote Natural Farming?** - Himachal Pradesh
- **Who is announced to receive the Norman Borlaug Award, 2023?** - Dr. Swati Nayak
- **Which battlefield of the Kargil war has been opened up for tourists recently?** - Mushkoh Valley
- **Batadrava Than is related to which sect of Hinduism and where is it located?** - Vaishnavism, and is located in Assam