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Regional Rapid Transit System (RRTS)

Context: The Prime Minister is set to inaugurate India's first Regional Rapid Transit System (RRTS) on the 20th of October.

- On October 20, 2023, Prime Minister Narendra Modi will inaugurate the Delhi-Ghaziabad-Meerut RRTS Corridor at Sahibabad RapidX Station, marking the launch of India's Regional Rapid Transit System (RRTS).
- At the event, he will also flag off the RapidX train connecting Sahibabad to Duhai Depot.
- The priority section of the Delhi-Ghaziabad-Meerut RRTS Corridor spans 17 km and links Sahibabad to 'Duhai Depot,' with stops at Ghaziabad, Guldhar, and Duhai.
- The RRTS project is a high-speed commuter transit system with trains operating at 180 kmph and high-frequency services, ensuring intercity commuting every 15 minutes, which can be further increased to every 5 minutes as needed.
- Eight RRTS corridors have been identified in the National Capital Region (NCR), with the Delhi-Ghaziabad-Meerut Corridor being one of the prioritized corridors in Phase-I.
- This project, developed at a cost of over Rs 30,000 crore, will reduce travel time between Delhi and Meerut to less than an hour.
- The RRTS is a world-class regional mobility solution, aligned with the PM GatiShakti National Master Plan, and aims to provide multi-modal integration with railway stations, metro stations, and bus services.
- **PM GatiShakti National Master Plan**
 - The plan's objective is to transform India into a hub of world-class infrastructure, facilitating seamless connectivity for the movement of people, goods, and services.
 - A digital platform will be established to bring together 16 ministries, including rail and roadways, to enable integrated planning and coordinated implementation of infrastructure projects.
 - **Targets under GatiShakti:**
 - Development of 11 industrial corridors and the creation of two new defense corridors in Tamil Nadu and Uttar Pradesh.
 - Ensuring 4G connectivity in all villages across the country.
 - Increasing the capacity of renewable energy generation to 225 GW, up from the current 87.7 GW.
 - Expansion of the national highway network to 2 lakh km.
 - Growing the length of the transmission network to 4,54,200 circuit km.
 - Establishment of 220 new airports, heliports, and water aerodromes.
 - Enhancing the cargo handling capacity of railways to 1,600 million tons from the current 1210 million tons.
 - Expanding the gas pipeline network by adding 17,000 km.
 - Establishing 202 fishing clusters, harbors, landing centers, and more to support the fishing industry.
- These transformative regional mobility solutions are expected to boost economic activity, improve access to employment, education, and healthcare opportunities, and contribute to a significant reduction in traffic congestion and air pollution in the region.

Minimum Support Prices (MSP)

Context: The Cabinet Committee on Economic Affairs has approved higher Minimum Support Prices (MSP) for all mandated Rabi Crops in the 2024-25 Marketing Season.

- The Minimum Support Price (MSP) is the rate at which the government buys crops from farmers, safeguarding them against significant drops in agricultural prices.
- MSP is determined by the government based on recommendations from the Commission for Agricultural Costs and Prices (CACP) at the beginning of the sowing season.
- The concept of MSP was introduced in 1966, inspired by the Green Revolution, and it applies to essential agricultural commodities for both Kharif and Rabi crops.
- MSP serves as a form of insurance provided by the government to shield farmers from price fluctuations that could adversely affect their income and subsequent production.
- This system ensures that market prices do not fall below the predetermined MSP, thereby providing farmers with a favorable economic situation.
- **Various Committees/Commissions on MSP:**
 - Commission for Agricultural Costs and Prices (CACP), formerly known as the **Agricultural Prices Commission (APC)**, recommends MSPs for 23 crops, including wheat, rice, pulses, oilseeds, and cotton.

CROPS COVERED UNDER MSP

KHARIF CROPS (14)		RABI CROPS (7)		CALENDAR YEAR CROPS (4)	
1.	Paddy	1.	Wheat	1.	Copra
2.	Jawar	2.	Barley	2.	De-husked Coconut
3.	Bajara	3.	Gram	3.	Jute
4.	Ragi	4.	Masur	4.	Sugar Cane (FRP)
5.	Maize	5.	Rapeseed& Mustard		
6.	Arhar	6.	Safflower		
7.	Moong	7.	Torai		
8.	Urad				
9.	Cotton				
10.	Ground Nuts				
11.	Sunflower				
12.	Soyabean				
13.	Sesamum				
14.	Nigerseed				

• CACP recommends MSP for 22 crops before the sowing period each year
 • MSP derived for Toria based on MSP for Rapeseeds and Mustard and for De-husked Coconut on the Basis of MSP of Copra.
 • Fair and Remunerative prices for Sugar is also declared

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- **National Commission on Farmers (NCF)**, led by M.S. Swaminathan from 2004, advocated for a minimum 50% profit over production costs as the MSP.
- **Shanta Kumar Committee**, set up in 2014, proposed shifting from price-based to income-based support for farmers while reviewing the Food Corporation of India (FCI).
- **Factors considered for determining the MSP:**
 - Cost of production
 - Changes in input prices
 - Input-output price parity
 - Trends in market prices
 - Demand and supply
 - Inter-crop price parity
 - Effect on industrial cost structure
 - Effect on cost of living
 - Effect on the general price level
 - International price situation
 - Parity between prices paid and prices received by the farmers
 - Effect on issue prices and implications for subsidies
- **Calculation of MSP**
 - The Swaminathan Committee uses three variables to determine production costs: A2 (out-of-pocket expenses), A2+FL (including unpaid labor), and C2 (comprehensive cost).
 - The recommended MSP formula by the Committee is $MSP = C2 + 50\% \text{ of } C2$, with a 1.5 times formula for increased MSP based on A2+FL.
 - Farmers seek the 1.5 times MSP formula applied to C2 costs, emphasizing the importance of production costs in MSP determination.
 - The government notes that production costs are a key factor in MSP and considers both C2 and A2+FL when calculating MSP through the Commission for Agricultural Costs and Prices (CACAP).

Copyright of Religious Texts

Context: The Delhi High Court's interim order grants copyright protection to adaptations of scriptures, covering explanations, meanings, interpretations, and audiovisual works.

- The Delhi High Court identified "large-scale infringement" on the Internet involving the reproduction of copyrighted works from the Bhaktivedanta Book Trust.
- This trust publishes books and commentaries related to Indian religious philosophy and Vaishnava texts.
- The Bhaktivedanta Book Trust was founded in 1970 by Swami Prabhupada, who also established the International Society for Krishna Consciousness (ISKCON), commonly known as the Hare Krishna Movement.
- **Are Religious Scriptures Copyright protected?**
 - Religious scriptures, such as the Old Testament, New Testament, and the King James Version of the Bible, are in the public domain and not protected by copyright.
 - Modern translations of the Bible, like the New International Version (NIV), are copyright-protected because they represent new creative works by the translators.
 - In India, copyright law safeguards "original work," which includes independently created expressions fixed in a tangible medium. The creators/authors of such works have exclusive rights to use, reproduce, distribute, perform, and display their creations.
 - Copyright law in India also protects transformative work, which involves taking existing material and significantly modifying, reinterpreting, or building upon it to create something new and unique.
 - Transformative works, such as parodies or creative reinterpretations, are typically considered distinct from copyright infringement and are protected by Indian copyright law.
- **Orthodox Schools of India Philosophy**
 - The six orthodox schools of Indian philosophy, known as "shatdarshanas," are Nyaya, Sankhya, Yoga, Vaisheshika, Purva Mimamsa, and Uttara Mimamsa (Vedanta Philosophy).
 - These schools commonly believe in the concepts of Karma, rebirth, and Moksha (salvation) as the ultimate goal of human life, representing liberation from the cycle of birth and death.

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- **Nyaya** Philosophy, founded by Sage Gautama, follows a scientific and rational approach, relying on the five senses for knowledge acquisition.
- **Sankhya** Philosophy, the oldest of all philosophies, is dualistic and distinguishes between Purusha (soul) and Prakriti (nature), influencing Advaita Vedanta and emphasizing self-awareness through meditation and concentration.
- **Yoga** Philosophy, systematized by Sage Maharshi Patanjali, focuses on disciplining the body and mind, aiming to free Purusha from Prakriti through self-awareness and practicing Ashtanga Yoga.
- **Vaisheshika** school deals with metaphysics and posits that the universe consists of a finite number of atoms, with Brahman as the fundamental force causing consciousness.
- **Purva Mimamsa** school, based on sage Jaimini's Mimamsa Sutras, emphasizes the authority of the Vedas, the significance of yajnas, and mantras in achieving salvation.
- **Uttara Mimamsa (Vedanta)** is a monistic philosophy that considers the world as unreal and Brahman as the only reality, with three sub-branches: Advaita, Vishista Advaita, and Dvaita, based on the Upanishads, the end portions of the Vedas.

Alternate Investment Funds

Context: SEBI and RBI are jointly probing efforts by alternate investment funds for bypass of regulatory measures.

- SEBI has identified around twelve instances, amounting to approximately ₹150-200 billion (\$1.8-2.4 billion), in which AIFs have been exploited to bypass regulations set by other financial authorities, including the RBI.
- These AIFs are suspected of attempting to evade regulatory requirements, such as the "evergreening" of stressed loans.
- The investigations have the potential to result in stricter disclosure requirements and enhanced oversight, particularly affecting private credit funds.
- Private credit funds have attracted substantial investments from both domestic and global high net-worth investors due to their flexibility and lenient regulations.
- **AIFs**
 - An Alternative Investment Fund (AIF) is a distinct investment category, separate from traditional investment instruments.
 - AIFs in India serve as privately pooled investment vehicles that gather funds from sophisticated investors, whether Indian or foreign, to be invested according to specified categories, in compliance with SEBI (Alternative Investment Funds) Regulations, 2012.
 - AIFs can take various legal forms, such as companies, Limited Liability Partnerships (LLPs), trusts, and more. They are typically favored by high net worth individuals and institutional investors, given the substantial investment required.
 - There are **three primary categories** of AIFs:
 - **Category I AIFs**, authorized to invest in startups, early-stage ventures, social ventures, SMEs, and sectors considered socially or economically favorable by regulators. This category includes venture capital funds like angel funds, SME funds, social venture funds, and infrastructure funds.
 - **Category II AIFs**, encompassing a range of funds, including real estate funds, debt funds, private equity funds, and those dealing with distressed assets. Category II AIFs do not extensively employ borrowing and are generally not leveraged.
 - **Category III AIFs**, which employ complex trading strategies and may utilize leverage, often through investments in listed or unlisted derivatives. This category includes hedge funds and PIPE Funds.
- Category I and II AIFs are typically closed-ended with a minimum tenure of three years, whereas Category III AIFs may be open-ended or closed-ended.
- **Evergreening of Loans**
 - Evergreening loans involves banks attempting to rescue a loan that is on the brink of default by extending additional loans to the same borrower.
 - This practice is akin to "zombie lending," where banks offer more loans to prevent borrowers from becoming substantial non-performing assets (NPAs).
 - Evergreening loans is usually a short-term solution for banks, concealing the true status of stressed loans.

Large Language Models

Context: India's Principal Scientific Advisor, Ajay Sood, has announced the establishment of a "high-powered committee" tasked with investigating the development of large language models, or LLMs.

- Large Language Models (LLMs) serve as a foundational technology that powers various "intelligent" software, enabling applications like ChatGPT.

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- On July 31, 2023, the office of the Principal Scientific Adviser released a draft National Deep Tech Startup Policy for public input.
- **What is LLM?**
 - Large language models are advanced language models trained using deep learning techniques on extensive text data.
 - These models have the capacity to generate human-like text and perform various natural language processing tasks.
 - A language model, in general, involves assigning probabilities to sequences of words based on the analysis of text corpora. It can vary in complexity, from simple n-gram models to more intricate neural network models.
 - "Large language models" typically refers to models employing deep learning techniques and featuring a substantial number of parameters, often ranging from millions to billions.
 - These models can effectively capture intricate language patterns, resulting in text that is frequently indistinguishable from human-generated content.
- **Large Language Models (LLMs) use a neural network architecture with various layers:**
 - Embedding layer transforms words into high-dimensional vectors, capturing word meaning and context.
 - Feedforward layers have fully connected layers for learning higher-level patterns.
 - Recurrent layers process data sequentially, capturing word dependencies.
 - Attention mechanism allows selective focus on essential parts of the input text for more accurate predictions.
- **Examples of LLMs**
 - **GPT-3 (Generative Pre-trained Transformer 3):** Developed by OpenAI, it's one of the largest Large Language Models with 175 billion parameters. It's versatile, handling text generation, translation, and summarization.
 - **BERT (Bidirectional Encoder Representations from Transformers):** Developed by Google, BERT excels at understanding sentence context and providing meaningful answers to questions.
 - **XLNet:** Created by Carnegie Mellon University and Google, XLNet employs "permutation language modeling" and achieves top performance in various language tasks, including language generation and question answering.
 - **T5 (Text-to-Text Transfer Transformer):** Developed by Google, T5 is trained for different language tasks, specializing in text-to-text transformations like translation, summarization, and question answering.
 - **RoBERTa (Robustly Optimized BERT Pretraining Approach):** An enhanced version of BERT by Facebook AI Research, RoBERTa delivers superior performance across multiple language tasks.
 - **Bloom:** The first multilingual Large Language Model, Bloom, stands out for its transparency. It was developed collaboratively by a significant number of AI researchers in a single research project.

NEWS IN BETWEEN THE LINES

Akkulam Lake



Recently, Operation Anantha, a flood mitigation project, introduced a Veli breakwater to allow year-round drainage of excess water from Akkulam lake into the sea.

About Akkulam Lake:

- Akkulam Lake is an artificial lake situated in the **Thiruvananthapuram, Kerala**.
- Akkulam Lake is **an extension of Veli Lake** and it eventually merges with the Arabian sea at the end.
- Akkulam Lake is renowned for its **serene and peaceful ambiance**.
- Akkulam Lake is a favored destination for various activities, including **boating, picnicking and bird-watching**.

Rio Negro River



Recently, the Rio Negro river experienced its lowest water level since 1902.

About the Rio Negro River:

- The Rio Negro, also known as the **Guainía** in its upper part, is the largest **left tributary of the Amazon River**, contributing about **14%** of the water in the Amazon basin.
- It is recognized as the **largest blackwater river** globally.
- The river was named by Spanish explorer **Francisco de Orellana in 1541**.
- The Rio Negro is among the **ten largest rivers** in the world by average discharge.
- The source of the **Rio Negro is in Colombia**, where it is **known as the Guainía River**.
- It **flows east-northeast** through the **Puinawai National Reserve**, forming the border between Colombia's Department of Guainía and **Venezuela's Amazonas State**.

Major Tributaries:

The Rio Negro is fed by various tributaries, both from the left (**Taruma-Açu, Cuieiras, Apuaú and Jauaperi**) and right (**Uaupés, Teá and Marié**).

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Fourth Krishi Road Map



Recently, the President Droupadi Murmu inaugurated the fourth Krishi Road Map (2023-2028) of Bihar with a budget of ₹1.62 lakh crore.

About the Fourth Krishi Road Map:

- The fourth Krishi Road Map is a **strategic plan** developed by the government of Bihar, India.
- The roadmap **aims to increase agricultural production in Bihar** while enhancing farmers' incomes over the **next five years**.
- It focuses on storage, processing, **seed expansion**, **irrigation**, crop diversification and improved agriculture marketing.

Historical Context:

- This is the fourth edition of the Agriculture Road Map in Bihar, with previous editions launched in **2008**, **2012** and **2017**.
- **Wheat, maize** and **rice** production have notably grown since the first roadmap in **2008**.

Marsquake



Recently, the scientists have revealed the source of most powerful marsquake in history occurred in 2022.

What is Marsquake?

A marsquake is a **seismic activity on Mars** that is similar to an **earthquake**. It is caused by the **sudden release** of energy in the planet's interior.

Cause of the Marsquake: Initially, scientists suspected a **meteoroid impact** as the cause of the marsquake due to its seismic signal.

Magnitude of the Marsquake: The marsquake had a magnitude of **4.7**, making it a significant event.

International Collaboration: The search for the cause involved an international effort, with contributions from space agencies including the **European Space Agency (ESA)**, **Chinese National Space Agency (CNSA)**, **Indian Space Research Organisation (ISRO)** and **United Arab Emirates Space Agency**.

RISC-V Technology



Recently, Qualcomm and Google have teamed up to develop RISC-V chips for wearable devices.

About RISC-V Technology:

- RISC-V is an **open-source technology** pronounced as "risk five."
- It is an open-source **Instruction Set Architecture (ISA)** used for custom processor development across various applications.
- It represents the fifth generation of processors following the **Reduced Instruction Set Computer (RISC)** concept.
- It was initially designed for **academic use** but is now managed by RISC-V International.

Applications of RISC-V: RISC-V is applied in **wearables, industrial and IoT devices**, home appliances, **smartphones**, automotive systems, **high-performance computing** and data centers.

Place in News

Gulf of Guinea

Recently, Indian Naval Ship INS Sumedha made a port visit to Lagos, Nigeria, as part of its deployment to the Gulf of Guinea (GoG).

Location: Gulf of Guinea is located off the **western coast of Africa** and is the northeasternmost part of the **tropical Atlantic Ocean**.

Coordinates: It lies at the intersection of the Prime Meridian (0°0'E) and the Equator (0°0'N).

Coastal Countries: Sixteen coastal countries border the Gulf of Guinea, including **Angola**, Benin, Cameroon, Cote d'Ivoire, **Democratic Republic of Congo**, **Republic of Congo**, **Guinea**, Equatorial Guinea, Guinea-Bissau, **Gabon**, **Nigeria**, **Ghana**, **São Tomé** and Principe, Togo and Sierra Leone.

Salinity: The waters in this region have relatively **low salinity** due to **river inflow** and **high rainfall**.

Major Rivers: The **Volta** and **Niger rivers** are the primary tributaries of the Gulf of Guinea.



POINTS TO PONDER

- ❖ Which cities were destroyed by the famous eruption of Mount Vesuvius in A.D. 79? - **Pompeii and Herculaneum**
- ❖ In which countries has the use of bamboo to prevent landslides been successful? - **Malaysia, the Philippines and Nepal**
- ❖ When was the first Ethics Committee of Lok Sabha established? - **Lok Sabha(2000) and Rajya Sabha (1997)**
- ❖ Which atoll in the Marshall Islands is the largest? - **Kwajalein**
- ❖ What is the AI tool that confirmed and announced the supernova discovery without human intervention? - **BTSbot (Bright Transient Survey Bot)**

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