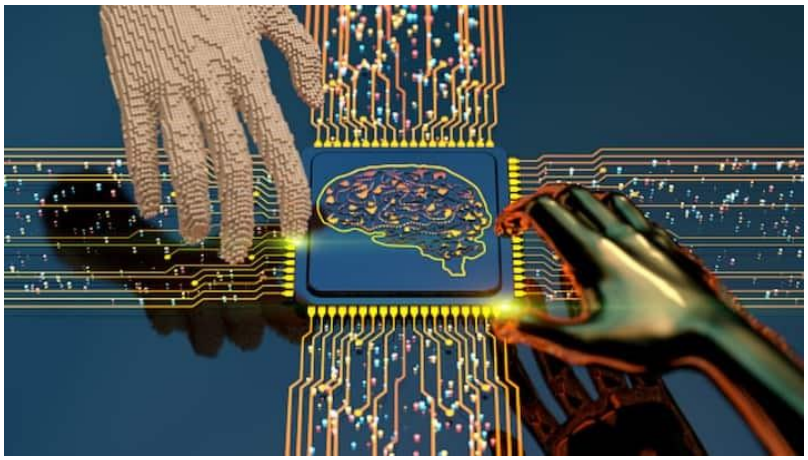
UPSC CURRENT AFFAIRS NOTES 31-01-2024

GenAI



The generative AI (GenAI) market has experienced an unparalleled surge, catapulting from $5.7 billion in 2020 to an astonishing $44.9 billion by 2023, marking an extraordinary 690% increase.

This phenomenal growth underscores the escalating demand for generative AI technologies across various sectors.

Details

The Impact of OpenAI's ChatGPT

A report from AltIndex.com predicts that the GenAI industry is **on track to become a $100 billion behemoth by 2026,** with a substantial 65% growth anticipated over the next two years.

The report attributes this surge to the **monumental impact of OpenAI's ChatGPT, which achieved the status of the fastest-growing app in history.**

With an impressive 100 million users within just two months of its release, ChatGPT played a pivotal role in elevating artificial intelligence to new heights in 2023.

Looking ahead to 2030, industry projections suggest that the GenAI market will more than double, surpassing an impressive $207 billion.

Global Market Dynamics

United States Dominance: The United States is poised to maintain its position as the largest GenAI market, with a projected value of $37.3 billion in 2026, reflecting a substantial 60% increase compared to the current year.

China's Accelerated Growth: China, as the second-largest market globally, is expected to experience even more significant growth, with its GenAI market valuation soaring by 72% to reach $14.7 billion in the next two years.

German Market Dynamics: The generative AI market in Germany is anticipated to see a 60% increase over the next two years, reaching a valuation of $4.5 billion by 2026.

About Gen AI

Generative Artificial Intelligence (AI) represents a transformative leap in machine learning, enabling systems to create original content, ranging from text to images and beyond.

Foundational Principles:

Generative Models: Generative AI is based on generative models that aim to learn the underlying patterns of data and generate new instances that resemble the original input.

Neural Networks: Deep learning, a subset of machine learning, plays a crucial role in generative AI. Neural networks, particularly Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs), are fundamental architectures.

Training Data: Generative AI requires large datasets for training, allowing models to capture intricate patterns and nuances, ensuring diverse and high-quality output.

Key Algorithms:

Generative Adversarial Networks (GANs): GANs consist of a generator and a discriminator, engaged in a continuous adversarial process. The generator creates content, and the discriminator evaluates its authenticity. This iterative feedback loop refines the generator's ability to create realistic output.

Variational Autoencoders (VAEs): VAEs focus on encoding input data into a probabilistic distribution. This distribution is then sampled to generate new,

similar instances. VAEs introduce a probabilistic element, enabling controlled and diverse outputs.

Recurrent Neural Networks (RNNs) and Transformers: For sequential data generation, such as text, RNNs and Transformers are employed. RNNs maintain context over time, while Transformers excel in capturing long-range dependencies.

Applications:

Art and Creativity: Generative AI has revolutionized the art world, producing unique paintings, music compositions, and even poetry. Artists collaborate with AI systems to explore new realms of creativity.

Content Generation: In content creation, from writing articles to generating marketing copy, generative AI automates the process, enhancing efficiency and creativity.

Image Synthesis: StyleGAN, a GAN variant, has demonstrated exceptional capability in synthesizing highly realistic images, leading to applications in video game design, fashion, and virtual environments.

Drug Discovery: Generative models contribute to drug discovery by predicting molecular structures and simulating potential drug candidates, accelerating research in pharmaceuticals.

Ethical Considerations:

Bias and Fairness: Generative AI systems can inadvertently inherit biases present in training data, raising concerns about fairness and potential discrimination in generated content.

Misinformation and Deepfakes: The ability to generate realistic content also brings the risk of malicious use, such as creating deepfake videos or spreading misinformation.

Ownership and Attribution: The question of who owns generated content and how to attribute authorship poses legal and ethical challenges, especially as AI systems contribute to creative outputs.

Corruption Perception Index (CPI) 2023

Overview:

India's rank in the Corruption Perception Index (CPI) 2023 has slipped to 93 out of 180 countries, with a score of 39.

About Corruption Perception Index (CPI)

It is an annual index released by **Transparency International, a global civil society organization.**

Since its inception in 1995, the Corruption Perceptions Index has become the leading global indicator of public sector corruption.

The CPI ranks 180 countries and territories by their perceived levels of public sector corruption on a scale of zero (highly corrupt) to 100 (very clean).

It uses data from 13 external sources, including the World Bank, World Economic Forum, private risk and consulting companies, think tanks and others.

The scores reflect the views of experts and business people, not the public.

Highlights of Corruption Perception Index 2023

CPI-2023 results show that most countries have made little to no progress in tackling public sector corruption.

CPI global average score remains unchanged at 43 for the twelfth year in a row.

Denmark topped the index for the sixth consecutive year.

Somalia was ranked last, other countries occupying the bottom spots included: Venezuela, Syria, South Sudan and Yemen.

India has tied with Maldives, Kazakhstan, and Lesotho to rank at 93 out of 180 countries. In 2022, India was ranked at 85.

Pakistan scored 29 with a rank of 133 and China, scored 42 occupying rank 76.

World Economic Forum (WEF)

It is an international organization headquartered in Geneva, Switzerland, that brings together individuals and political and business leaders each year to discuss significant issues that impact the global economy. These include, but are not limited to political, economic, social, and environmental concerns. The WEF is best known for its annual WEF Meeting at Davos, the Swiss ski resort. The event regularly draws business and political leaders from around the world for a series of discussions about global issues.

Shumang Leela

The artists of Shumang Leela bear the brunt of the enduring ethnic violence in Manipur which is also jeopardizing the vibrant cultural fabric of the state.

About Shumang Leela

- It is a traditional form of theatre in Manipur.
- In this the roles of female artists are all played by male actors and male characters are played by female artists in case of female theatre groups.
- It was started as a comic genre for royalty and has evolved into a powerful medium for mass education, entertainment, and relaxation.

- In this, the roles of women are all played by men, called **Nupi Shabis**.
- The female roles are taken up by transgender actors.
- The tradition is believed to be descended from **Lai Haraoba, a ritual of the Meitei community of Manipur.**
- Purpose: The plays provide a vehicle for educating the public about social, political, and economic issues.
- Types - Shumang Leela is of two types
    - **Nupa Shumang Leela** – It is Performed only by men
    - **Nupi Shumang Leela** – It is Performed only by women

What is Lai Haraoba?

- Lai Haraoba is a religious festival celebrated by the Meitei people who are largely settled in and around Manipur.
- It is held at neighborhood shrines dedicated to the local umanglai deities.
- It is observed in the months between February and May-June.

Umang Lais

The Umang Lais (the sacred deities or sylvan deities) are the only mysterious deities believed to reside in the sacred groves of Manipur and the Meiteis (Manipuris) worshiped and celebrated the Umang Lai Haraoba Festival every year.

Lab-grown fish

Recently, ICAR-Central Marine Fisheries Research Institute (CMFRI) has entered into a collaborative research agreement with a private-sector start-up offering cultivated meat technology solutions to grow fish meat in the laboratory.

About Lab-grown fish

- It is merely a type of lab-grown — or cultivated/ cultured — meat.
- Seafood without the sea is 'grown' in the same way as other cultivated meats are grown — without the need to raise and kill an animal.
- Process: Cultivated fish meat is produced by isolating specific cells from fish and growing them in a laboratory setting using media that is free of animal components.
- The final product is expected to replicate the flavour, texture, and nutritional qualities of 'real' fish meat.

Role of Central Marine Fisheries Research Institute

- It will focus on the genetic, biochemical, and analytical work related to the project.
- In its cell culture lab, it will carry out research on early cell line development of high-value marine fish species — a process that involves isolating and cultivating fish cells for further research and development.
- It will initially focus on developing cell-based meat of fish such as pomfret, kingfish, and seerfish.

Recently, a number of countries have made great strides in this pioneering technology.

Israel is the frontrunner, followed by Singapore, the United States and China.

CMFRI

Central Marine Fisheries Research Institute's mandate is to conduct researches on exploited , under - and unexploited marine fisheries resources and fisheries oceanography , to advise on rational exploitation and make forecast of abundance , development and upgradation of technologies for maximising production through mariculture and conducting teaching , training and extension programmes for development of human resources in fisheries .

MARATHA MILITARY LANDSCAPES OF INDIA

India has officially nominated the "Maratha Military Landscapes" for inclusion in the UNESCO World Heritage List for the year 2024-25.

This nomination encompasses a network of twelve forts spread across Maharashtra and Tamil Nadu, showcasing the strategic military prowess of the Maratha rule.

The forts, developed between the 17th and 19th centuries, stand as a testament to an extraordinary fortification and military system envisioned by the Maratha rulers.

List of Nominated Forts

1. Salher
2. Shivneri

3. Lohagad
4. Khanderi
5. Raigad
6. Rajgad
7. Pratapgad
8. Suvarnadurg
9. Panhala
10. Vijaydurg
11. Sindhudurg
12. Gingee (in Tamil Nadu)

Historical Significance

- The Maratha Military Landscapes represent the evolution of military ideology from the 17th century under the reign of Shivaji Maharaj, continuing through subsequent rules until the Peshwa rule in 1818 CE.
- The forts are **strategically located in diverse geographical regions, including Sahyadri mountain ranges, Konkan Coast, Deccan Plateau, and Eastern Ghats.**

Cultural Criteria for Nomination

The nomination falls under the cultural category and satisfies the following criteria for inclusion in the World Heritage List:

- **Criterion (iii):** Bearing a unique testimony to a cultural tradition or civilization.
- **Criterion (iv):** Being an outstanding example of a building, architectural or technological ensemble, or landscape illustrating significant stages in human history.
- **Criterion (vi):** Being directly or tangibly associated with events, living traditions, ideas, beliefs, and works of outstanding universal significance.

Diversity of Forts

- The twelve forts exhibit diversity in hierarchies, scales, and typological features.
- They include hill forts like Shivneri, Lohagad, Raigad, Rajgad, and Gingee; hill-forest fort like Pratapgad; hill-plateau fort like Panhala; coastal fort like Vijaydurg, and island forts like Khanderi, Suvarnadurg, and Sindhudurg.

Protection and Conservation

- **Archaeological Survey of India (ASI):** Eight forts, including Shivneri, Lohgad, Raigad, Suvarnadurg, Panhala, Vijaydurg, Sindhudurg, and Gingee, are protected by ASI.
- **Directorate of Archaeology and Museums, Govt. of Maharashtra:** Salher fort, Rajgad, Khanderi fort, and Pratapgarh are under the protection of this Directorate.

Current World Heritage Sites in India

- India currently has 42 World Heritage sites, including 34 cultural sites, 7 natural sites, and 1 mixed site.
- Maharashtra hosts six World Heritage Sites, including Ajanta Caves, Ellora Caves, Elephanta Caves, Chhatrapati Shivaji Maharaj Terminus, Victorian Gothic and Art Deco Ensembles of Mumbai, and the Western Ghats.

Tentative List Inclusion

- The Maratha Military Landscapes were included in the Tentative List of World Heritage sites in 2021, marking the sixth cultural property nominated for inclusion in the World Heritage List from Maharashtra.

Ratle HE project

The government recently announced **diversion of Chenab river** water through **diversion tunnels at Drabshalla in Kishtwar district** to expedite the 850-MW Ratle Hydro Electric Project in Jammu & Kashmir.

Details

Ratle Hydro Electric Project

- The Ratle Hydroelectric Plant is a run-of-the-river hydroelectric power station, with permitted pondage under the **Indus Water Treaty**, currently under construction on the Chenab River, downstream of the village near Drabshalla in Kishtwar district of the Indian Union Territory of Jammu and Kashmir .
- The project includes a 133 m (436 ft) tall gravity dam and two power stations adjacent to one another.
- The Cabinet Committee on Economic Affairs sanctioned the project in January 2021 at the cost of Rs 5,281.94 crore.
- The project is scheduled to **commence operations in 2026**. **The 850MW facility** is expected to generate up to 3,136 million units of electricity in a year.

Project Objectives

- The construction activities of the Project will result in direct and indirect employment to around 4000 persons and will contribute in overall socio-economic development of the Union Territory of Jammu and Kashmir.

- Further, Union Territory of Jammu and Kashmir will be benefitted by getting free power worth Rs. 5289 crore and through levy of Water Usage Charges worth Rs.9581 crore from Ratle Hydro Electric Project, **during project life cycle of 40 years**.

Strategic

- This comes in the backdrop of India's plan to expedite strategically important hydropower projects in the union territory post its reorganization, as the government plans to fully utilize its share of water under **the Indus Waters Treaty of 1960.**
- Strategically vital in the context of **China developing** the controversial **China-Pakistan Economic Corridor (CPEC), part of its One Belt One Road (OBOR)** infrastructure initiative.

Why water diversion?

- The diversion of river flow will **enable isolation of dam area**, paving way for the excavation and construction works.
- The move will expedite construction activities and help in **minimising delays** so as to facilitate all efforts to meet the scheduled commissioning deadline of May 2026.